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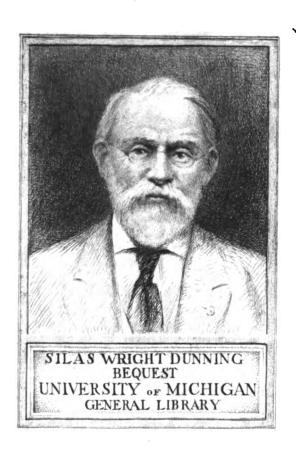


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JOURNAL

OF THE

United Service Institution of India.

Vol. XLVII, 1918.

January-October 1918.

Published under the Authority of the Council.

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Journal of the United Service Institution of India.

Vol. XLVII—1918.

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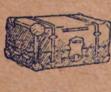














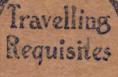
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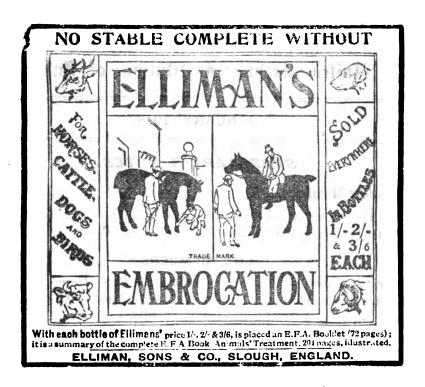
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Anited Service Institution of India.

JANUARY 1918.

SEORETARY'S NOTES.

I.—New Members.

The following members joined the Institution between the 7th September 1917 and 30th November 1917 inclusive:—

LIFE MEMBERS.

Major A. Forbes.

Captain E. S. Hearn.

Captain C. Campbell.

Lieut. Colonel J. W. Thomson.

Lieut. Colonel K. A. Plimpton.

ORDINARY MEMBERS.

Captain W. D. G. Batten.

Lieut, B. H. Boucher.

Captain M. E. Park.

Major G. L. Pepys.

Major G. A. Phillips.

Captain S. L. Thompson.

Captain A. V. Gompertz.

Lieut, A. A. J. Allen.

Captain D. J. Boyd.

Captain F. Sumption.

Captain K. Horan.

Lieut. A. D. Wilson.

Lieut. Colonel P. A. Barton.

Captain T. Lloyd.

II.—Tactical Problems.

In order to assist officers working for tactical examinations, the Institution has schemes with maps for issue to members only, at Rs. 5 each, which includes criticism and a solution by a qualified officer; or without criticism, Rs 2-8-0 each. 26 schemes are now available.

III.—Maps.

The Institution has for sale a variety of large scale maps (1 and 2 inches to one mile), price As. 8 each.

They are specially useful for instruction in map reading, tactical schemes and in preparation for examination, and can be had either of English or Indian country.

IV.—Premia for Articles in the Journal.

Articles accepted for publication in the Journal are paid for, and a sum of approximately Rs. 400 is awarded for articles and reviews published in each Quarterly Journal.

V.—Contributions to the Journal.

With reference to Ariny Regulations, Indfa, Volume II, paragraph 487, and King's Regulations, paragraph 453, as amended by Army Order 340 of 1913, intending contributors to the Journal of the United Service Institution of India are informed that action to obtain the sanction of His Excellency the Commander-in-Chief to the publication of any article in the Journal of the United Service Institution of India will be taken by the Committee. Contributors are, therefore, responsible that the sanction of their immediate superior has been obtained, and this should be noted on all articles sent for publication. Articles need not be submitted in duplicate.

Contributors must have their articles either typed or printed.

VI.—Library Catalogue.

The library catalogue revised up to 1st January 1916 is now available. Price Rs. 2 or Rs. 2-4-0 per V.P.P. A list of books received each year is published with the January Journal.

VII.—Gold Medal Prize Essay 1917-18.

The Council have chosen as the subject for the Gold Medal Essay for .1917-18 the following: —

The manœuvres of the future, and the general principles on which higher peace training should be conducted in view of the lessons of the present war.

The following are the conditions of the competition:-

- (1) The Competition is open to all gazetted officers of the Civil administration, the Navy, Army and Indian Defence Force who are members of the U.S.I. of India.
- (2) Essays must be printed or type-written and submitted in triplicate.

- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Essays are to be strictly anonymous. Each must have a motter, and enclosed with the essay there should be sent a sealed envelope with the motto written on the outside, and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1918.
- (6) Essays will be submitted for adjudication to referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of a successful candidate will be announced at a Council Meeting which will be held in August or September, 1918.
- (8) All essays submitted are to become the property of the United Service Institution of India absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays should not exceed about 15 pages of the Journal when printed, exclusive of any appendices, tables or maps.

VIII.—War Maps.

War maps are on view in the Reading Room of the Institution with the positions of the troops, so far as is known, marked with flags, in each theatre of War.

IX.—Amendments to Rules of the U.S.I. of India.

SECTION VI-MEMBERSHIP.

Paras 2 and 3 of the above section have been amended to read as follows:—

Para 2.

"Life Members of the Institution shall be admitted on the following terms:

Rs. 75 plus entrance fee Rs. 10 (see para 4) or Rs. 85 in all.

Para 3.

"Ordinary members of the Institution shall be admitted on payment of an entrance see (see para 4) of Rs. 10 on joining, and an annual subscription of Rs. 5 to be paid in advance. The period of subscription commences on 1st January."

Para 3 (a).

All members of the Institution resident in Simla for not less than 90 days during the year will be charged an additional subscription of Rs. 5 per annum from the 1st January 1917, except in the case of life members, when this additional subscription is voluntary.

X.—List of new books in Library.

Akbar the Great Mogul, 1542-1605, by Vincent A. Smith	ı	B. 272
Ambala to Peshawar by Motor-Car, Guide to places of int	er-	
est on the Road, by Lt. Colonel H. A. Newell	•••	F. 352
Naval and Military Geography of the British Empire	•••	F. 353
Lines of Communication, being letters of a temporary Offi		
in The Army Service Corps, by Captain J. E. Agate	•••	K. 164
Report on the Mesopotamia Commission	•••	M. 902
Besieged in Kut and after, by Major C. H. Barber	•••	M. 4903
With Botha and Smuts in Africa, by W. Whittail	•••	M. 904
The Statesman Year Book 1917, edited by J. Scott-Reltie		Q. 245
Spoken Atabic of Lower Mesopotamia by Revd. J. Van Ess	•••	Q. 246

XI.—Gold Medal Essay 1916-17.

Major W. F. Blaker, R.F.A., has been awarded the Gold Medal for the best essay 1916-17. The essay is published in this Journal.

XII.—Subscriptions.

The Council have decided that the additional subscription of Rs. 5 per annum, charged to all members resident in Simla for not less than 90 days during the year, (see Amendments to Rules, Section VI—para 3 (a), shall be voluntary in the case of *life* members.

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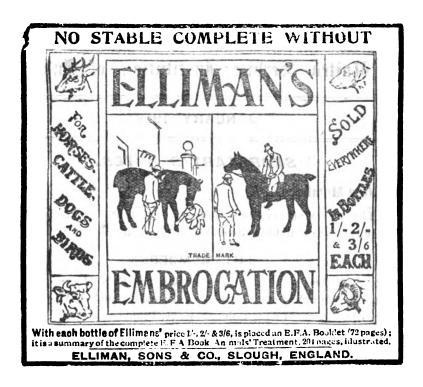
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Anited Service Institution of India.

JANUARY 1918.

SEORETARY'S NOTES.

I.—New Members.

The following members joined the Institution between the 7th September 1917 and 30th November 1917 inclusive:—

LIFE MEMBERS.

Major A. Forbes.

Captain E. S. Hearn.

Captain C. Campbell.

Lieut. Colonel J. W. Thomson.

Lieut. Colonel K. A. Plimpton.

ORDINARY MEMBERS.

Captain W. D. G. Batten.

Lieut, B. H. Boucher.

Captain M. E. Park.

Major G. L. Pepys.

Major G. A. Phillips.

Captain S. L. Thompson.

Captain A. V. Gompertz.

Lieut, A. A. J. Allen,

Captain D. J. Boyd.

Captain F. Sumption.

Captain K. Horan.

Lieut, A. D. Wilson,

Lieut. Colonel P. A. Barton.

Captain T. Lloyd.

II.—Tactical Problems.

In order to assist officers working for tactical examinations, the Institution has schemes with maps for issue to members only, at Rs. 5 each, which includes criticism and a solution by a qualified officer; or without criticism, Rs 2-8-0 each. 26 schemes are now available.

III.-Maps.

The Institution has for sale a variety of large scale maps (1 and 2 inches to one mile), price As. 8 each.

They are specially useful for instruction in map reading, tactical schemes and in preparation for examination, and can be had either of English or Indian country.

IV.—Premia for Articles in the Journal.

Articles accepted for publication in the Journal are paid for, and a sum of approximately Rs. 400 is awarded for articles and reviews published in each Quarterly Journal.

V.—Contributions to the Journal.

With reference to Ariny Regulations, India, Volume II, paragraph 487, and King's Regulations, paragraph 453, as amended by Army Order 340 of 1913, intending contributors to the Journal of the United Service Institution of India are informed that action to obtain the sanction of His Excellency the Commander-in-Chief to the publication of any article in the Journal of the United Service Institution of India will be taken by the Committee. Contributors are, therefore, responsible that the sanction of their immediate superior has been obtained, and this should be noted on all articles sent for publication. Articles need not be submitted in duplicate.

Contributors must have their articles either typed or printed.

VI.—Library Catalogue.

The library catalogue revised up to 1st January 1916 is now available. Price Rs. 2 or Rs. 2-4-0 per V.P.P. A list of books received each year is published with the January Journal.

VII.—Gold Medal Prize Essay 1917-18.

The Council have chosen as the subject for the Gold Medal Essay for 1917-18 the following:—

The manœuvres of the future, and the general principles on which higher peace training should be conducted in view of the lessons of the present war.

The following are the conditions of the competition:-

- (1) The Competition is open to all gazetted officers of the Civil administration, the Navy, Army and Indian Defence Force who are members of the U.S.I. of India.
- (2) Essays must be printed or type-written and submitted in triplicate.

- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Essays are to be strictly anonymous. Each must have a motto, and enclosed with the essay there should be sent a scaled envelope with the motto written on the outside, and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1918.
- (6) Essays will be submitted for adjudication to referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of a successful candidate will be announced at a Council Meeting which will be held in August or September, 1918.
- (8) All essays submitted are to become the property of the United Service Institution of India absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays should not exceed about 15 pages of the Journal when printed, exclusive of any appendices, tables or maps.

VIII.—War Maps.

War maps are on view in the Reading Room of the Institution with the positions of the troops, so far as is known, marked with flags, in each theatre of War.

IX.—Amendments to Rules of the U.S.I. of India.

SECTION VI-MEMBERSHIP.

Paras 2 and 3 of the above section have been amended to read as follows:—

Para 2.

"Life Members of the Institution shall be admitted on the following terms:

Rs. 75 plus entrance see Rs. 10 (see para 4) or Rs. 85 in all.

Para 3.

"Ordinary members of the Institution shall be admitted on payment of an entrance see (see para 4) of Rs. 10 on joining, and an annual subscription of Rs. 5 to be paid in advance. The period of subscription commences on 1st January."

Para 3 (a).

All members of the Institution resident in Simla for not less than 90 days during the year will be charged an additional subscription of Rs. 5 per annum from the 1st January 1917, except in the case of life members, when this additional subscription is voluntary.

X.-List of new books in Library.

Akbar the Great Mogul, 1542-1605, by Vincent A. Smith				
Ambala to Peshawar by Motor-Car, Guide to places of inter-				
est on the Road, by Lt. Colonel H. A. Newell	•••	F. 352		
Naval and Military Geography of the British Empire	•••	F. 353		
Lines of Communication, being letters of a temporary Officer				
in The Army Service Corps, by Captain J. E. Agate	•••	K. 164		
Report on the Mesopotamia Commission	•••	M. 902		
Besieged in Kut and after, by Major C. H. Barber	•••	M. 4903		
With Botha and Smuts in Africa, by W. Whittail	•••	M. 904		
The Statesman Year Book 1917, edited by J. Scott-Reltie	· · · ·	Q. 245		
Spoken Atabic of Lower Mesopotamia by Revd. J. Van Ess	•••	Q. 246		

XI.—Gold Medal Essay 1916-17.

Major W. F. Blaker, R.F.A., has been awarded the Gold Medal for the best essay 1916-17. The essay is published in this Journal.

XII.—Subscriptions.

The Council have decided that the additional subscription of Rs. 5 per annum, charged to all members resident in Simla for not less than 90 days during the year, (see Amendments to Rules, Section VI—para 3 (a), shall be voluntary in the case of *life* members.

United Service Institution of India.

RULES OF MEMBERSHIP.

A LL officers of the Royal Navy, Army, Colonial Forces, and of Volunteer Corps in India and Gazetted Government Officers shall be entitled to become members

without ballot, on payment of the entrance fee and annual subscription.

The Council shall have the power of admitting as honorary members the members of the Diplomatic Corps, foreign naval and military officers, foreigners of distinction, other eminent individuals, and benefactors to the Institution, not otherwise eligible to become members.

Life Members of the Institution shall be admitted on the following terms:—

Rupees 75 + entrance fee (Rs. 10) = Rs. 85.

Ordinary members of the Institution shall be admitted on payment of an entrance fee of Rs. 10 on joining, and an annual subscription of Rs. 5, to be paid in advance. The period of subscription commences on 1st January.

All members of the Institution resident in Simla for not less than 90 days during the year will be charged an additional subscription of Rs. 5 per annum from the 1st January

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Subscribing members of the Royal United Service Institution, Whitehall, London,

not liable for entrance fee while the affiliation rules are in force.

Life members receive the Journal of the Institution post free anywhere, but ordinary members only in India. All members may obtain books from the library on paying the postage.

Honorary Members shall be entitled to attend the lectures and debates, and to use the premises and library of the Institution without payment; but should they desire to be supplied with the Journal, an annual payment of Rs. 8, in advance, will be required.

Divisional, Brigade and Officers' Libraries, Regimental Messes, Clubs, and other

subscribers for the Journal, shall pay Rs. 8 per annum.

Serjeants' Messes and Regimental Libraries, Reading and Recreation Rooms shall

be permitted to obtain the Journal on payment of an annual subscription of Ra. 6.

If a member fails to pay his subscription for any financial year (ending 31st December) before the 1st June in the following year, a registered notice shall be sent to him by the Secretary inviting his attention to the fact. If the subscription is not paid by 1st January following his name shall be posted in the Reading Room for six months and then struck off the roll of members.

Members joining the Institution on or after the 1st October, will not be charged subscription on the following 1st January, unless the Journals for the current year have been

supplied.

Members are responsible that they keep the Secretary carefully posted in regard to changes of rank and address. Duplicate copies of the Journal will not be supplied free to members when the original has been posted to a member's last known address, and not

been returned by the post.

Members or Subscribers to the Journal, intimating a wish to have their Journals posted to any address out of India, shall pay in advance Rupee 1 per annum, to cover foreign postage charges, but Life Members who have left India shall not be liable for foreign postage on Journals.

All communications shall be addressed to the Secretary, United Service Institution of

India, Simla.

Contributions to the Journal.

All papers must be written in a clear, legible hand, and only on one side of the paper All proper names countries, towns, rivers, etc., must, when in manuscript, be written in capital letters. All plans must have a scale on them.

Contributors are responsible, when they send articles containing any information which they have obtained by virtue of their official positions, that they have complied with the provisions of A. R. I., Vol. II., para. 487, and King's Regulations, para. 453.

Anonymous contributions under a non-de-guerre will not be accepted or acsnowledged; all contributions must be sent to the Secretary under the name of the writer, and the paper will, if accepted, be published under that name unless a wish is expressed for it to be published under a nom-de-guerre. The Executive Committee will decide whether the wish can be complied with.

The Committee reserve to themselves the right of omitting any matter which they

consider objectionable. Articles are only accepted on these conditions.

The Committee do not undertake to authorise the publication of such papers as are accepted, in the order in which they may have been received.

Contributors will be supplied with three copies of their paper gratis, if published. Manuscripts of original papers sent for publication in the Journal will not be returned to the contributor, unless he expresses a wish to have them back and pays the postage.

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 The United Service Institution of India is situated at Simla.
 Officers wishing to become members of the United Service Institution of India should apply to the Secretary. The rules of membership are printed on the opposite page.

3. The reading-room of the Institution is provided with all the leading newspapers, usagazines, and journals of military interest that are published. War maps are on view in the Reading Room, with the positions of the troops, so far as is known, marked with flags, in each theatre of war.

4. There is a well-stocked library in the Iustitution, from which members can obtain beoks on loan, free. Suggestions for new books are solicited, and will be submitted to the Committee. Books are sent out to members V. P. for the postage, or bearing by railway.

5. The Institution publishes a Quarterly Journal in the months of January. April, July and October which is issued postage free to members in India and to all life members; but ordinary members wishing to have their journals sent to any address out of India must pay in advance Re. I per annum to cover foreign postage charges.

6. Members and the public are invited to contribute articles to the Journal of the Institution for which honoraria will be awarded by the Executive Committee. Rules for the guidance of contributors will be found on the opposite page.

7. MEMBERS ARE RESPONSIBLE THAT THEY KEEP THE SECRETARY CAREFULLY POSTED WITH REGARD TO CHANGES OF ADDRESS.

8. When on leave in England, members can, under the affiliation rules in force, attend the lectures and make use of the reading-room, etc., of the Royal United Service Institution, Whitehall, on payment of a subscription of 5 shillings per six months.

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The Journal

OF THE

Anited Service Institution of India.

Vol. XLVII.

JANUARY 1918.

No. 210.

GOLD MEDAL PRIZE ESSAY 1916-17. (AWARDED GOLD MEDAL).

The possibility of ulitizing India as a military assot to the Empire mere in accordance with her size and population than at present.

BV

MAJOR W. F. BLAKER, R. F. A.

MOTTO

"I have gathered a posy of other men's flowers, and only the cord that binds them is my own".

The greatest of the many fundamental truths, re-emphasized by the present world-combat, is that the whole of a nation's resources, human and material, must be brought into play, if war on a grand scale is to be waged with any certainty of success. It is therefore necessary to consider the subject for discussion under two main heads, the military as well as the economic; but before either is examined in detail reference must be made to one indispensable requirement common to both viz:—the need of a definite policy.

THE NEED OF A DEFINITE POLICY.—Before the present war the strength of the Army in India numbered about 225,000 men of whom approximately 75,000 were British Troops and the rest Indian. This force was intended (i) to maintain internal order, (ii) to deal with all Frontier Wars in the ordinary

sense of the term, (iii) to provide the contingents needed from time to time for all over-seas expeditions, (iv) to defend India against attack by a first class power until reinforcements should arrive from other parts of the Empire. The active participation on a large scale of India's Army in a war on European soil had been considered, but the idea was abandoned and it is hardly an exaggeration to say that a cut and dried scheme to meet such a contingency did not exist. The consequence was that, on August 4th 1914, India, through no fault of her own found herself confronted by a situation for which she was but imperfectly prepared. How she met that situation is now a matter of history, and her achievements during the last 3 years will rank high in the annals of warfare when in due time the records of this titanic struggle come to be examined by the dispassionate critic. It is sufficient to say here that India not only safeguarded herself within and on the Frontier, that she not only sent considerable forces simultaneously to East Africa, to Mesopotamia and to other places, but that she also played her part in Europe to an extent undreamed of by anyone before the war. It is true that when she sent her scores of thousands across the seas they were replaced by others from England; but these were not trained to the high standard of her own troops, they were not a striking force ready for immediate action; had they been so they would have been kept at Home, and India would not have been called upon to meet a contingency of which she was not forewarned. Improvisation remained the only alternative and it could have been avoided had a definite policy existed.

It is the business of the Imperial Authorities to prescribe an Imperial policy in future, and then for India, in close cooperation with them, to meet the military and economic demands necessary to put her share of it into execution.

It is neither fair nor wise to instruct your trainer to prepare a horse for the Derby and then, at the starting-gate, to say you are sorry you made a mistake, but it is the Grand National he is in for.

INCREASE OF THE REGULAR ARMY.—With regard to the military demands likely to be made upon India it is safe to say that they will in future be greater than heretofore. When peace is concluded it is probable that certain overseas possessions, e. g. Mesopotamia and German East Africa, will be added to the Empire; and although steps to raise local forces will of course be taken with the least possible delay these must at first be tentative, results will be problematical, and India will have to assist in tiding over the period till things take definite shape. She may even find herself obliged to furnish overseas garrisons in the newly acquired territories for some decades to come. Thus an additional responsibility will fall upon the armed forces of India, and ways and means must be found to strengthen them accordingly. It is at present impossible to tell what actual increase will be needed, but, whatever it be, it will have to be provided by the martial races of India.

Now, broadly speaking, there has always been general agreement as to which were or were not the "martial races of India", but there was before the war considerable divergence of opinion when men got down to details. 1914, however, much has happened to modify previously held convictions, and with respect to the Indian Army, one of the most remarkable phenomena is the change wrought in the minds of those best qualified to judge as to the fighting worth of some of India's warlike races. Values are now differently assessed, things are seen in truer perspective, agreement is possible on many points where none was in sight before and the levelling process which has resulted has been of immense benefit to the Army as a whole. To one fact the writer can certainly testify without fear of contradiction after serving in the field for nearly two years in widely different theatres ofwar, with Indian troops of almost every kind, namely:-to the existence of a general consensus of opinion, that, within certain moderate limits, it is possible to broaden the basis of recruiting, and thereby to increase numbers, without adversely

Gold Medal Prize Essay, 1916-17.

affecting the fighting value of the Indian Army.* But the present opportunity must be seized; the most must be made of the existing frame of mind. The old prejudices must never be allowed to return, and, if new regiments are raised or new classes enlisted, everything must be done from the outset to imbue them with the idea that they are every whit as good as their fellows. Everyone must understand that his unit is an integral part of the field army as likely to be employed on active service as any other, and that there is no such thing as a sort of "glorified police". Especially the British officers, who are the backbone of everything, must particularly understand that the term "martial" is only a relative one, and that given a man of good stock the soldier is entirely what his officer makes him.

If we now consider the extent to which expansion will be necessary, we are confronted by the insuperable difficulty that, till the terms of peace are finally decided upon, it will not be possible to tell what India's increased responsibilities are going to be. Allusion has been made to some, but, whatever they may amount to, it is quite certain that the voluntary system must be adhered to for the Indian Atmy, that inducements must be offered according to the numbers required and that a much larger Reserve than formerly will have to be created.

CREATION OF AN ADEQUATE RESERVE.—To provide this Reserve it is suggested that the best means will be the shortening of the period of service with the colours and the offer of inducements which will ensure that a much higher percentage of men than formerly enter the Reserve of their own accord and remain in it so long as they are physically fit. At present the sepoy must put in 15 years with the Colours for a pension of Rs. 5 per mensem and 18 years for Rs. 6 (India Army Order No. 50 of January 8th 1917), but it is at least doubtful

^{*}NOTE:—British officers intimately connected with recruiting have expressed the opinion that it is possible to increase the strength of the Indian Army by 50,000 men without going far outside the classes now enlisted.

whether he continues to be a really efficient soldier for so long a time. The average man, unless he has been "employed", is past his prime after 12 to 14 years service, and the probabilities are that deterioration begins to set in some years earlier. We should therefore aim at keeping a man with the Colours so long as he is at his best and no longer. As soon as he begins to stagnate he should be passed to the Reserve and replaced by a younger soldier. It may be argued that the mere fact of his leaving the Colours on the first signs of decline will only hasten the process, and that, if his value in the ranks was Leginning to be doubtful, his value in the Reserve will decrease at a much greater speed the moment he loses touch with the moral influences, the comradeship and the esprit de corps of his regiment. But it must be remembered that, as a rule, it is sameness, it is monotony, that kills zeal, and experience proves that complete change is what a man needs most after a certain number of years continuous service in the ranks. To let him go to the Reserve when the desire for change comes is more likely to retard the process of deterioration, and he should return to his regiment with renewed interest in soldiering when called up for his annual periods of training.

It is therefore proposed that the terms of service for privates in the Indian Army might with advantage be altered as follows:—With the Colours 8 years; with a 1st Reserve 4 years; with a 2nd Reserve 3 years. Claim to full pension not to be established till the 3 years service in the 2nd Reserve have been completed. During both periods of Reserve-service men to be called up for one month's annual training on full pay and allowances. During the non-training period Reservists to receive a small retaining fee. Reservists of the 1st Reserve found physically unfit should be discharged with a bonus arranged on a sliding scale, according to their length of service. Unfits of the 2nd Reserve should receive a pension on a similarly graduated sliding scale. A sepoy's right to cut his name after three years should remain as it is, but it is anticipated that the comparatively short period of 8

years with the Colours will induce more men to complete their Colour-service than at present.

The advantages claimed for the above proposals are that Government will pay full price for a man's services during the best years of his life only and that the cost to the State will decrease from the moment he has passed his prime. A further advantage claimed is that the scheme would scatter, throughout the length and breadth of India, a large number of men whose welfare would still be closely bound up with the Army; they would feel they were still an integral part of it, and it would be to their own interest not only to remain loyal soldiers but to keep themselves fit as well.

As to administration it is suggested that the centres for both categories of the Reserve should be depots, and that one depot should be allotted to three battalions linked together in one group, the location of the depots being in the recruiting area, or as near it as possible. Each depot should be organised as a separate command and run on the lines of a training-unit with its own staff of British Officers, Indian Officers and Non-Commissioned Officers according to a scale somewhat as follows:—

BRITISH OFFICERS.

1	Commandant	•••	•••	preferably an officer who has completed his period of regi- mental command.		
_						
1	Second-in-Comma	ınd	•••	These 5 officers to be se-		
1	Adjutant	•••	•••	conded from the battalions		
1	Quartermaster	•••	•••.	and replaced by an increase		
2	Company Officers		•••	of establishment at the rate		
1	Medical Officer	•••	•••	of 2 per battalion.		
Indians.						
1	Subadar-Major		•••	••		
1	1 Jemadar from each battalion					
3	Havildar Majors	•••	•••			
1	1 Sepoy or Lance-Naick Ins-		Provided by Battalions.			
	tructor, for, s	ay, ev	ery			
	10 recruits.			,		

Besides being answerable for the training of reservists and for their records, the Depot staff should be responsible for recruiting, for which purpose they should be given a certain number of Non-Commissioned Officers and men seconded from regiments as recruiters and changed as found necessary. It might be well worth considering the employment of reservists for this purpose.

With respect to both reservists and recruits, the Depot should be the central store for all articles of equipment, clothing and necessaries which should be furnished by Government under rules and regulations similar to those in force in the British Service. The present recruits kit allowance and the small amount given quarterly for the upkeep of kit would, of course, be discontinued.

If some such scheme were adopted it is believed that not only would the Indian Army Reserve in time become a reality, but the establishment of the proposed Depots would create an efficient machine for keeping battalions up to strength both in peace and war. A similar scheme might, mutatis mutandis, be devised for Cavalry and other arms and services: within the space allowed it is not possible to do more than outline the idea for Infantry and to suggest terms of service applicable to the private soldier.

SCHOOL OF GUNNERY.—Only one point with regard to other arms can and must be emphasized here. It is the need of a School of Gunnery in India. The want of such a School has been sorely felt by Gunners for many years, and, in view of the supreme importance of Artillery in modern war, it is certain that the ratio of guns to rifles, always low in India, will have to be increased. How to raise the necessary personnel is a matter requiring separate treatment, but for the training of even the prewar personnel a School of Gunnery was an urgent need.

RESERVE OF OFFICERS.—It is necessary to expatiate on the need of an adequate reserve of British officers for Indian regiments, and here the solution would seem to lie in the formation of Officers' Training Corps analogous to those at Home. Each

of the great cities of India should have its own Officers' Training Corps where barrack-square work could be taught. There is no leisured class in India, so that would-be officers cannot be taken away for long from the localities where they follow their normal calling. Only the higher training should be given in short intensive courses at other places, and even then only when no facilities for such courses exist on the spot. Away from the great cities candidates might undergo training with regular troops in cantonments or at the triple-battalion depots proposed in connection with the Indian Army Reserve. The Commanding Officer should in all cases support the first recommendation for a commission, and a subsequent period of probation should be prescribed. All out-of-pocket expenses should be defrayed by Government and officers given the chance of promotion up to field rank.

The old aristocracy of India provides another source from which officers must be obtained. This aristocracy is small, yet it forms a class whose influence is out of all proportion to its numbers, and we can no longer afford to ignore it if we wish to prevent its becoming a possible prey to the agitator. At present it has no sympathy with the spirit of discontent, but, if we continue to give it the cold shoulder, it may transfer its allegiance to the party of unrest and so constitute a grave menace to our rule. King's Commissions (not mere commissions under the Indian Army Act) must be given to the cadets of ruling houses, and to the sons of leading families whom we must admit to social equality. Those recommended for commissions should be carefully selected from amongst the most promising pupils of the Raikumar Colleges whence they should pass to the Imperial Cadet Corps, where sound military training should be imparted. We must divert the energies of the sons of the aristocracy into the right channel before it is too late and give them every chance of making the Army a career; only so can we ensure the permanence of the British connection and bind them to ourselves in lasting loyalty. We must cultivate the moral courage to stand by those who stand by us: if we fail to do so we positively drive them to disloyalty.

The Indian Defence Force.—It is a recognised principle in modern Armies that behind the regulars and their Reserve there must be a Second Line, and, if we intend to admit this principle in India, we shall find in the new Indian Defence Force Act an excellent instrument ready to our hand. The Act in its present form is a war-measure intended to remain in force during the continuance of the war and six months afterwards. Nothing better could have been devised in present circumstances but, if it does not cease to be operative six months after peace is concluded, it stands to reason that its provisions will be modified to meet peace-conditions.

As regards European British subjects it seems advisable that the modifications should tend towards the development of a system of Universal Military Training and that particular regard should be paid to local circumstances which vary greatly in different parts of India. In large towns, for instance, where a sufficient number of men can be got together, a prescribed number of hours training each month throughout the year will probably give the best results and be least irksome to those concerned. In areas where European civilians are scarce and widely scattered short intensive annual periods of training at suitable centres will probably be preferable. On the other hand it is possible that short intensive periods may be best even where many Europeans are gathered together, and that there will be no insuperable objection to the periodical complete withdrawal from their ordinary avocations of a certain percentage of civilians. At the present moment matters are so arranged that each Civil firm should have about one in eight of its employees away on military duty, and, even if a similarly high percentage were periodically called up in peace time, it is probable that business houses would soon adapt themselves thereto by engaging larger staffs. They would simply increase their leave-reserve, and Government would have to follow suit, for it has been proved that Government must draw on their civil cadres for military purposes in time of war and that provision must be made accordingly.

These and similar matters must be thoroughly considered in

12 Gold Medal Prize Essay, 1916-17.

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Now, whilst in most modern armies all Army Service personnel belongs to the permanent War Establishment, India still retains in the "follower" a person who is not an enlisted man. To a great extent he does not come to life till the outbreak of hostilities; only a few of the formations to which he is allotted exist in peace-time and for these no adequate reserve is maintained; for the rest improvisation at the eleventh hour is relied on. The consequence is that, besides adding enormously to the already herculean task of mobilisation, much of the human material hastily swept into the ranks of the "followers" is so unfit for its work that it may seriously hamper the fighting-troops. It is therefore urged that all actual and potential Army Service personnel be systematically organised in future, but, before proceeding to details it will be well to look back on the past history of the Indian "follower".

In the old pre-British Armies of Hindostan the "follower" had his definitely allotted place in the permanent war-organization of the community which was designed to facilitate the rapid mobilization of all available man-power. The fighting castes, the service, labour and menial castes were all classified and told off to their particular areas in camps, whence originated the separate quarters occupied by different trades and professions which we still see in Iudian cities to-day. Certain tribes were organized into subsidiary services as scouts, others as carriers and so forth. The primary ration detre of all these old time "followers" was the rendering of "service" to the fighting-troops from whom they required no protection since they were armed and fought and foraged for themselves.

Such was the system we found in the earliest days of British settlement in India, but we never properly reorganized it to suit our particular needs, nor did we in subsequent wars always take

effective steps to enforce discipline amongst the unruly hordes who accompanied our armies and whose recognised emoluments had in the old days largely consisted of loot. Constant troubles arose in consequence and led in the end to the disarmament of all followers and to the practical breaking-up of the old organization which was not replaced by any other worthy of the name till the Tirah campaign of 1897 forced the problem of followers to the front once more, and through the formation of our modern Transport Corps,* resulted in the first steps towards a reversion to the old system.

It is necessary to relate the above brief history of the "follower" for, unless we know something of his past, we fail to realise that there are in India castes and tribes with quasi-military traditions whose hereditary business it is to render "service" to fighting-troops and in whose eyes such "service" is just as honourable as is fighting in the eyes of the warrior.

This circumstance has an obvious bearing on the question of recruiting, for it indicates that we ought to be able to obtain from the castes concerned not only personnel which has for centuries pursued occupations of value to an Army, but likewise personnel whose recruitment should in no way clash with recruiting for the combatant services.

Taking advantage of this state of affairs it should therefore be our first care to draw up a complete list of all non-combatant personnel required by the Army and then, with the aid of accurate census returns, to ascertain exactly where the right men are and how many of them are available. The Army's requirements should show the approximate reserve needed to replace wastage amongst each class of follower; reliable data as to such wastage should be available at the end of the war.

That sufficient men of the right stamp exist can hardly be doubted, for we have in India, including Burma, specific tribes

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conjunction with the Civil Authorities and commercial communities in each Province, and, although uniformity should be aimed at so far as possible, it must be recognised that one set of hard and fast rules and regulations cannot be applied to the whole of India

If we accept the census figures of 1911 as a basis, and allow for normal increase at the rate of the previous 10 years, we may take it that there are, including 27,000 Anglo-Indians—about 70,000 European British Subjects between the ages of 15 and 50 years available for training. These should form a useful Second Line, and, in the event of war, a proportion of them should be liable to general service, and the rest to local service under rules similar to those made under the present Act.

With respect to Indians we must assume for the purpose of discussion that it is the serious intention of Government to attract the 6,000 men contemplated in the Indian Defence Force Act. Up to date the response of Indians has been extremely poor and some clauses of the Act have been sharply criticised in the vernacular Press. Yet few of the criticisms levelled against the Act from that particular quarter are based on sound argument, and we must look elsewhere for ideas which may suggest remedies.

It was hoped that the 6,000 would be trained successively in companies of 250 each at 6 different centres, and it has been suggested that one reason for the feebleness of the response was that this number of centres did not provide sufficient facilities within reasonable distance of mens' homes. There may be something in this for it must be remembered that amongst the classes "from which the Indian Army is not ordinarily recruited" there is a high percentage of stay-at-homes loath to go far afield for any purpose and therefore unlikely to enrol for general military service. The remedy would appear to lie in the establishment of more centres, and it is suggested that the Depots proposed in connection with the Indian Army Reserve might meet the case for the purpose of training though even then men might hesitate to undertake the liability to general service.

It has also been alleged that the task of raising the desired number has been left too much in the hands of men incapable of conducting what is in effect a recruiting-campaign, en miniature. In this there is probably a good deal of truth, and if we look for other likely "recruiters" there suggest themselves (1) the civil authorities, (2) non-official Indians of position, i, e, local notables not in Government employ. The objection to invoking the aid of civil authorities is that, once official machinery is set in motion, it becomes difficult to avoid a gradual drifting into something akin to methods of compulsion. In an oriental country a similar danger would undoubtedly exist were we to obtain the assistance of local notables who would naturally expect some recognition for their services and might resort to practices tending to make enrolment lose its voluntary character. But on the whole the second alternative appears the better, and we might increase its chances of success by holding out certain inducements (such as exemption from chowkidari) combined with the grant of small favours which would raise the izzat of the individual enrolled. these means fail then we can only trust that in time the spread of education and enlightenment will convince the classes concerned that the acquisition of rights demands the performance of honograble duties; that, regardless of caste, what is good enough for one is good enough for all in the service of the State; that our salvation is their salvation and that no matter where they serve, they serve their own cause when they serve the cause of the Empire. To give way to the clamour of those who ask for special food, uniforms of their own choice, etc. would be a mistake.

THE ORGANISATION OF ARMY SERVICE PERSONNEL.—Army Service Personnel may be said to include:—

- (1) Men permanently employed in the regular administrative services of the Army, e.g Supply and Transport; Medical; Veterinary; Remounts; Ordnance, etc.
- (2) Men temporarily employed during war in organised Labour, Porter and Artisan Corps.

12 Gold Medal Prize Essay, 1916-17.

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numbering 32,000,000 males whose profession is labour and who do not furnish a single soldier. The total working-power of India's 315,000,000 inhabitants should be almost inexhaustible and, provided it is well organised, it should contribute more than almost any other factor towards making India a valuable military asset to the Empire. The task will be great and complex but its difficulties should not be insuperable given a thoroughly thought-out scheme ensuring close and sustained co-operation between the civil and the military, including in the former representatives from all important commercial and industrial communities as well as Indians of position and influence.

Enumeration completed, the whole should be divided into categories and sub-categories as roughly out-lined at the head of this section. "Followers" in the present sense of the term, should cease to exist and the words "drabie" and "coolie" expunged from the military dictionary. All personnel required under category (1) for the permanent *administrative services of the Army should be regularly enlisted men. If recruits of suitable type from the right castes and professions are to come forward under any voluntary system, it is essential that the status, pay and general conditions of service in these important branches be improved and their proper position in the Army recognised. To simplify administration, variety of terms of engagement should be avoided, and, in order to build up the Reserve required, a fairly short term of service, say 5 years, is recommended with 10 in the reserve to follow.

Personnel for categories (2),(3) and (4) would not be enlisted till war is imminent, but the machinery for raising it should be ready. As regards recruitment of labour, porter and artisan corps, the closest co-operation with all civil bodies is

^{*}Note. The principle has already been admitted in the case of the muletwer who has quite recently been placed on a combatant footing. But this is probably because the Indian personnel of mule units is drawn from exactly the same class as fighting troops. Drivers of Camel and Bullock units are still "followers" and all Indian supply personnel such as butchers, bakers and "clerks are still civilians in peace-time.

even more essential than in the case of other categories. Valuable experience respecting these corps has been gained in Mesopotamia and it should not be lost. Early this year there were in that country 8 porter and 16 labour-corps; they included 5 Indian gaol-corps and numbered 26,000 men, yet even these were insufficient for the heavy work required of them.

The efficiency of all such corps depends in a peculiar degree on their officers who should be gentlemen with first-hand experience in the supervision of Indian labourers Planters and engineer contractors suggest themselves; plenty should be found in the Indian Defence Force, and they should come from districts whence the men themselves are drawn. Similar remarks apply to Indian officers and Non-Commissioned Officers and suitable individuals retired from Sappers and Miners, Police, etc, should be available. Owing to liability of corps to be split up in the field, officers should be plentiful and corps organised in small self-contained companies.

The location of depots where the corps would be raised should be agreed on in peace-time, and members of the Indian Defence Force might, in each Depot-area, provide a small nucleus staff to ensure that registers were kept up to date and all arrangements complete for mobilisation.

The suggestion that artizan corps should be separate units is supported by the opinion of Officers Commanding Labour Corps in Mesopotamia who are all agreed on this point, but it appears that some special arrangements might be necessary to ensure a sufficient supply of trained men. The shortage of skilled labour has been severely felt in some quarters (including Sapper and Miner Companies), and, in order to meet it, it has in some cases been necessary to take from private firms men whom they themselves urgently needed for the execution of war-contracts. Here surely is a case for mutual help and for the building up of a reserve to meet both civil and military requirements. It would be in the interests of firms to create such a reserve and it should not be impossible to make with them some arrangement whereby they, as well as Government factories, would train extra men.

To quote only one instance. The wear and tear of boots, harness and other leather equipment has been enormous in the present war, and matters have been aggravated by a shortage of mochies capable of executing repairs. Skilled hand-workers were the type needed, for it must be remembered that machinery cannot be used in the field on any but the smallest scale. Could not some of our private firms of leather-workers institute learnerclasses for the training of the men required? Government might pay their wages whilst they were under training or a small apprentice-fee might be given for each man trained. The firm might be accorded the right to retain the best men; the next best might be enlisted as mochies in batteries and other units where the class of work hitherto done by mochies has for years been notoriously low. Of the rest of the men, sufficient to meet, say, six months war wastage might be dismissed to their homes with a small retaining-fee. These men should easily make a living in towns and villages because the wearing of boots is increasing fast in India and more repairs are demanded now than ten years ago. The retaining-fee would give Government a lien on their services for a certain number of years, and if the fee were payable at post-offices or police-stations this would not only simplify the process of payment but also ensure that the payees were not lost sight of. A similar system might be worked out for each class of skilled labour. Considerations as to space forbid the elaboration of particulars regarding categories (3) and (4); suffice it to say that recruitment and the building up of reserves for (3) would naturally be conducted through the agency of existing civil departments, e.g. Public Works Departments, Railway Board, etc.

As to cost, it is believed that an organization on the lines indicated would actually be cheaper than the present improvisations whose cost has been extremely high. Very large numbers of physical unfits, for instance, were sent out to Mesopotamia owing to the inevitably perfunctory nature of medical examinations, carried out at a time of extreme pressure. These men absorbed lakks of rupees, tons of food and shipping, besides an

incalculable amount of energy of already over-worked Administrative Staffs, until at last they died or returned to India only to absorb hospital space. In other directions saving might be effected by the introduction of more up-to-date methods. Thus the extension of roads suitable for mechanical transport should greatly reduce the number of transport animals as well as the personnel required for them. In short it is believed that were the details of the proposed scheme carefully worked out, fewer and not more Army Service personnel would be needed and that, for once in a way, it might be possible to combine an increase in efficiency with a decrease in expenditure.

Economic Considerations.

Modern war is so inextricably bound up with economics that no great military problem can be solved without carefully considering its economic aspects. These aspects are so numerous and many-sided that they affect almost every sphere of human activity, but for the purpose of our present investigation we may classify them roughly under three main heads, the agricultural, the industrial, and the commercial.

THE DEVELOPMENT OF AGRICULTURE. - India is mainly an agricultural country, and, whatever her manufacturing industries may become in the future, her chief industry is and must always remain that of the land; four-fifths of her population belong to agricultural classes, upon them the prosperity of the peninsula depends, and nothing Government has done is of more vital importance to the welfare of the people than the encouragement of land cultivation. And Government has done a very great deal; more perhaps in this direction than in any other. British public works in Iudia constitute one of the finest monuments any race has ever erected to its own memory, but amongst them stand pre-eminent our irrigation canals whereby millions of acres have been placed under cultivation and beyond the reach of famine. Yet the giving of practical aid of this nature is far from all that Government has accomplished. By means of model farms, of colleges for teaching and research, and by the formation of co-operative societies the foundations of prosperity have

been truly laid. The special attention now being devoted to the general subject of agricultural education should lead to further notable progress, especially if the knowledge of the actual cultivator can be improved by means of practical demonstration.

It is evidently recognised that the time has come for India to depart from her traditional views on agricultural matters, that more intimate relations must be established between agriculture and industry, and that, with regard to both, India must follow, much more closely than heretofore, the lead of the great industrial states of the West. Agriculture means far more than the production of foodstuffs. As to these India is already practically self-supporting except in sugar, of which large quantities are imported from Java and Mauritius. Agriculture includes the cultivation of all grown produce and what is required is a revival of industry brought about by the scientific development of agriculture. An American Economist recently estimated that 86% of all manufactured products come from the farm and from the soil in their raw state. The production of raw material must precede the machinery using it and this material must come from within.

The present war has proved once again that a nation's true safety lies, mainly in its own fighting strength which, in modern war, depends on vast numbers of trained men and on economic. stability in the fullest sense of the term. To ensure such economic stability, it is essential that, so far as possible, a nation be economically independent of others; that is to say that the nation be capable of producing out of its own resources everything that is required for modern war. Absolute economic independence is of course impossible of attainment by any nation, but the nearest approach to it should be found in those nations which possess within their own borders the largest and most varied supplies of raw material. Where these supplies are deficient in quantity, in quality or in kind, other parts of the world must be drawn on to a greater or less extent, and economic independence will suffer proportionately. The deficiencies must be made good-either from colonies or from foreign countries-by

importation over land or sea routes which may become precarious; or be closed altogether, at any moment.

At present a land-route into India hardly exists in the modern sense of the term, and India has to rely for such imports as she needs, almost entirely on the sea. She has done so successfully in the past, but it would be unwise to assume that she will always be able to do so in the future. It therefore behoves her without loss of time to reconsider her position, to modify her methods, and to extract from the earth all that nature has given her.

THE DEVELOPMENT OF INDUSTRY.—But it is not enough for India, nor for any other nation, merely to reap the harvest from field and forest, from quarry and mine. The good things garnered must be utilised to the utmost degree, and this can be done only by means of up-to-date and scientific industrial methods. The fact has been recognised to some extent and there have been some remarkable cases of pioneering new industries. The most notable instance is that of the undertakings of the late Mr. J. N. Tata, but it cannot be denied that the sum total of effort has not as yet been commensurate with existing possibilities.* This is due to many causes too numerous and too complex for examination here, and many of the difficulties confronting India are such as cannot be removed at a moment's notice. Not the least amongst these are connected with the characteristics of the people of India in whom certain inherent defects militate strongly against industrial development. Not only is the whole subject as yet relatively new and strange to the people as a whole, but even those amongst them who have assimilated some correct ideas are handicapped by a quaint mixture of conservatism and speculativeness, of opportunism and inertia, which must be detrimental to the foundation of industry on a sound and permanent basis. Then there is in some cases an absence of mutual trust, a lack of confidence in each other, which is fatal to that co-operation so necessary in undertakings on a grand scale; and the painful revelations which followed the failure of a large number of Indian Banks have tended

Norg. Lord Sydenham in the "XIXth Century and After".

to shake confidence in swadeshi ventures. Added to the above there is also what Lord Sydenham so aptly describes as "the incapacity to observe and appreciate facts and the taste for metaphysical and technical distinctions which characterise Indian mentality".* Such obstacles to progress require time for their elimination, and it is a mere truism to say that education forms one of the most effective tools in the hands of Government for this purpose.

ELEMENTARY EDUCATION.—There is probably no question which has more seriously engaged the attention of India's greatest statesmen during the last 20 years than that of education, and, though much has been done, the lack of elementary education still constitutes one of the most crying needs of the country. When the question of education was first taken in hand, a beginning was unfortunately made at the wrong end. University education was developed at the expense of primary education which is at present retarded mainly on the score of expense. The cost of providing elementary education on an adequate scale would be great. It is estimated at Rs. 5 per child per annum and it is difficult to suggest a solution for so serious a problem, but there does seem to be a ray of hope in the idea that it may be feasible so to increase the prosperity of India that Government may in time be able to meet the greater part of the cost out of the revenue. And here again industrial development must play an important role, and increased elementary education must go hand in hand with it.

TECHNICAL EDUCATION—But besides elementary education, one of the most important aids to industrial development is technical education. This also has already received the earnest attention of Government, as is proved by the existence of technical colleges, the contemplated establishment of new ones, and by the foundation of such institutions as the "Sydenham College of Commerce and Economics" affiliated to the University

Note. - Messra. Tata are still the only firm in India capable of producing rails.

of Bombay. There are also special chairs for Indian economics at the Universities of Madras, Calcutta and Allahabad. value of all these institutions is inestimable but it is still difficult to attract to them sufficient numbers of men of the right stamp. The man of the wrong stamp is to the fore as usual; he belongs to that undesirable "university" type which too often hunts for certificates and degrees that will help him into soft jobs under Government, or possibly into the legal profession. This intruder does not help industrialism and should be discouraged whilst no stone should be left unturned to obtain the right sort; more might for instance be done to get hold of youths actually in factories and other business-concerns by means of greater facilities for evening classes. The need for European supervision will probably always exist in Indian factories, and it is important that they should be men of British stock, but it is also important that they should be supported by an ample number of thoroughly trained Indian assistants.

SUGGESTED LINES OF INDUSTRIAL DEVELOPMENT WITH SPECIAL REFERENCE TO WAR MATERIAL.—Though India is not a rich country her natural wealth is considerable and varied. There is nothing to prevent expansion of industrial activity except want of enterprise and of practical scientific knowledge. Given these there is no reason why Indian industry should not by degrees emerge from the embryonic stage and render the country self-supporting in most respects. It is impossible here to enumerate the many directions in which expansion is possible but, since India's value as a military asset forms the main subject of our theme, we may note that many of the chemicals so vitally important in the manufacture of munitions are bye-products of industries and cannot be produced on a commercial scale and at reasonable cost without the establishment of allied industries.

Thus picric acid would follow the development of the coal-tar industry, whilst glycerine is a natural development of the soap and oil industries. Similar remarks apply to trini-

trotohiol, and it is just possible that the compounds from which T. N. T., is manufactured may be found in certain mineral oils.

Tungsten*, so essential to the manufacture of high-speed cutting-steel, occurs in a number of minerals, but the only ones dealt with on a commercial scale are wolfram and scheelite. Burma, before the war, produced about one quarter of the world's supply of wolfram which amount has since been very largely increased. Still further development should be possible and of extreme value. The enormous increase in the price of tungsten ores in the United States, following the demand for high speed cutting steel to fulfil war requirements, led to the production in the United States being more than trebled; and what is possible in America should be possible in India.

Zinc is largely used in the galvanised iron industry which accounts for probably 60% of the normal consumption of zinc. There is an important deposit of zinc-lead-silver at Bawdwin in Upper Burma, and the district may in future become a valuable source of supply. It is being actively developed at the present time but there is still room for improvement in the matter of zinc-smelting.

Mica is an excellent insulator, and the imports of mica into the United Kingdom averaged 34,200 cwts a year for the period 1909-13.

Of this quantity British India furnished 29,500 cwts; development might enable India to meet the whole demand.

Aluminium, in addition to its industrial use, is largely employed in the manufacture of Army equipment and (mainly in the form of alloys) for motor-cars and flying machines. It is produced from bauxite of which there are considerable deposits in India, yet there is no aluminium smelting in the country.

It is estimated that 120,000 tons of copper are required annually by the United Kingdom and that of these only 33,000

^{*}NOTE. For reference to mineral production, etc, see "Final Report of the Royal Commission on the natural resources; trade and legislation of certain portions of H. M's Dominions March 1917". Also "Records of the Geological Survey of India 1915".

tons, or 27%, are supplied from Empire sources, the remaining 73%, being derived from foreign sources. There is copper one in India but as yet no copper smelting, and from this it follows that brass, bronze and amalgams have to be made from imported materials and that India is not contributing as she should either to her own or to Imperial needs.

India's coal production has about trebled in the last 15 years and is now about 16,000,000 tons per annum. But it is still weak and as it is apparently incapable of much improvement she must fall back on mineral oils and hydro-electric power.

India still imports sulphuric acid of which, in the records of the "Geological Survey of India 1915" we read that it is "the key to most chemical and to many "metallurgical industries. It is essential to the manufacture of superphosphates, the purification of mineral oils and the production of ammonium sulphate, various acids and a host of minor products. It is a necessary link in the chain of operations involved in the manufacture of the alkalis with which are bound up the industries of making soap, glass, paper, oils dyes and colouring matters; and as a bye-product it permits the remunerative smelting of ores which it would be impossible otherwise to develop. During the last hundred years the cost of sulphuic acid in England has been reduced from over £ 30 to under £2 a ton, and it is in consequence of the attendant revolution in the European Chemical Industries, aided by increased facilities for transport, that in India the manufacture of alum, copperas, blue vitriol and the alkalis have been all but exterminated; that the export trade in nitre has been reduced instead of developed, that copper and several other metals are no longer smelted; that the country is robbed every year of over 90,000 tons of phosphatic fertilizers and that it is compelled to pay over 20 million sterling for products obtained in Europe from minerals identical with those lying idle in India."

No apology is needed for quoting in full so forceful a statement by the highest official authority. It will be seen

that there is amply scope for activity, and these and cognate matters are presumably engaging the attention of the Indian Munitions Board at the present time. Practical beginnings have already resulted from Government activity as is evidenced by the establishment of an acetone factory at Nasik. Last winter a travelling commission was engaged in studying Indian economic questions, and much has already been done in the all-important matter of surveying India's resources and collating information.

ECONOMIC INTELLIGENCE.—This raises the question of economic intelligence, and here again it seems that more might be done than at present. Without knowledge of facts, including statistics, it is impossible to formulate any sound and definite policy, and such a policy is at least as essential in economic as in purely military matters. Now, it is a common fault with some Intelligence Departments that they do not disseminate their information sufficiently; they become clogged with information themselves but do not issue enough of it to the right people, in the right form and at the right time. It would seem advisable to issue Government statistics not only more up to date both as to time and matter, but also to reproduce valuable information of all sorts in the vernacular and to distribute it more widely to interested parties. Experts' reports should be more generally issued and reliable trade journals published. They would form a valuable link between Industry and Commerce, and between the different branches of both, particularly in a land where such widely different conditions prevail in different parts and where, in consequence, the maintainance of the closest touch is especially essential.

INDIAN COMMERCE.—This is a consideration which must always be borne in mind in judging Indian commerce, since it constitutes a peculiarity more pronounced in India than in any other country in the World. Not only may India be said to be divided commercially into an Eastern and a Western portion, but the medley of races engaged in commercial and industrial pursuits increases the complexity of the problem. Thus all the trading castes of Western India have flocked into Bombay where they

predominate and add their enterprise to that of the Parsees. Eastern India the native inhabitants seem never to have taken a prominent part in external trade which is very largely in the hands of Europeans, whilst in internal trade the local Bengali has of late years been ousted from certain branches by the more enterprising Marwari. As regards industries, we find that cotton depends mostly on Indian Capital and Indian management although many of the mills in the Bombay Presidency employ a considerable number of Europeans; hydro-electric and iron and steel industries depend on Indian capital and foreign management, whilst jute and tea rely on English Capital and English management. In these circumstances it is evident how complex must be the task of the Commerce and Industry Department, and how great the need of the guiding hand of Government, so that no branch of agriculture, of industry or of commerce shall lag behind and all be welded together into one harmonious whole.

THE NEED OF STATE AID.—The idea of state action has hitherto run counter to all our most cherished economic theories, but the old laissez-faire methods will no longer do. The scientific application of State credit is an absolute necessity if we wish to make the utmost of our vast Imperial resources. We must (to quote Lord Milner's admirable phrase) endeavour to improve our Imperial domains by development "of the State by the State for the State", and liberal state expenditure, wisely directed, can alone ensure success. Examples show what can be accomplished. A few years ago £ 5,000,000 were speut on the Assouan Dam which has already added to the wealth and therefore to the taxable resources of Egypt £ 100,000,000 The great Chenab Canal enabled the Government of India to transfer one million people into what was once a worthless desert; eight years after its completion it yielded a revenue of 26 % on the capital outlay. The scientific co-ordination of public works, particularly of roads, railways and waterways is indeed the primary duty of any Government desirous of furthering industrial development. They are the veins and arteries through which the life-blood flows. They cannot be provided by private enterprise but, once provided by Government, they will do more towards the development of agriculture, industry and commerce than almost any other means.

In the matter of protecting development let the State's (i.e. Government's) assistance take what form it will, be it tariffs or subsidies or what not: those are questions for experts to decide according to the idiosyncracies of each trade or industry. Only one suggestion is ventured upon here: it is that means be devised to advance money for much longer periods than at present and on terms more acceptable to enterprising individuals or companies. The State must help men to help themselves so that they in turn may help the State whose true wealth lies in the number of its industrious inhabitants.

THE MAIN OBJECT TO BE ATTAINED.—But never let the main objects be lost sight of viz:—

- (1)..... Economic independence in general.
- (2).....Independence with respect to war in particular.

For the latter some immediate and special measures may be necessary, but they will be no more than insurance premia. Not one but several Government works and factories should exist for the manufacture of ample supplies of all articles which are strictly war material. Double sets of machinery should be available and, in peacetime, worked in rotation to prevent them deteriorating. Ample reserves of all kinds should be maintained, not forgetting reserves of trained man-power neady to begin work at high pressure at a few days notice.

If we can achieve these objects there is every reason to hope that India will not only become self-supporting to the utmost possible limit of her resources, but also that, in the event of another world-war, she may be able to give of her surplus to all the Eastern possessions of the British Empire.

SEA-POWER.—Last but not least India must contribute in a higher degree than heretofore towards the maintainance of seapower. The form and extent of her contribution is a matter for separate discussion, but the depredations of a future "EMDEN" must be rendered impossible in Indian waters. As regards mercantile shipping India can never be self-sufficient, but she ought

at least to know exactly where to lay her hand at a moment's notice on every available type of vessel from the sea-going freightship downwards. She should know exactly what is the minimum amount of ocean transport she requires for export and import, and a permanent register should be kept showing in detail every species of river-craft in the country with the percentage available for war. In innumerable over-seas expeditions our advances have in the past followed the course of rivers, and no amount of railway development in the future will appreciably affect the value of rivers as lines of communication.

To wage war successfully it is not only necessary to acquire the power to strike: it is equally necessary to be able promptly to apply that power wherever it is needed. By India's ability to perform this dual task will be judged her value as a military asset to the Empire and her fitness to hold, in the new Imperial Brotherhood of Nations, the place due to her present greatness and to her past traditions.

Summary of Proposals.

A definite policy must be prescribed by the Imperial Authorities. It will then be India's duty, in close and constant consultation with them, to devise such military and economic measures as may be necessary to make that policy effective. The fundamental idea underlying such a policy must be to develope the military and economic resources of India to such an extent that she may be not only self-supporting but able also, in case of need, to give of her surplus to other parts of the Empire.

To achieve this dual purpose India must —

- (1). Increase her Regular Army which can be done by broadening the basis of recruiting.
- (2). Create an adequate Army Reserve by shortening the period of colour-service and by establishing depots which shall serve as centres for the Reserve and as recruiting centres.
- (3). Take steps to prepare for an inevitable increase in Artillery; such steps to include the early foundation of a School of Gunnery.

- (4). Make the Indian Army Reserve of Officers a reality, and grant His Majesty's Commissions to chosen cadets of the old Indian aristocracy.
- (5). Ensure that the Indian Defence Force Act remains operative after the War.—The provisions of the Act should be adapted to suit local conditions and should tend towards the development of a system of universal military training.
- (6). Abolish the "follower" (in the present sense of the term) and regularly enlist him in Army Service units which exist as such in peace-time.
- (7). Create the machinery necessary for the rapid enlistment on mobilisation of Army Service personnel required for military formations which have no peace-time existence, taking special measures to provide ample reserves of skilled labour needed for certain formations and civil factories.
- (8). By means of the simultaneous development on scientific lines of agriculture, industry and commerce, render herself economically independent to the utmost limit of her resources.— Elementary education, technical education, particularly of a practical nature, financial support by the State, and the systematic co-ordination of public works are held to be the measures most likely to lead, in time, to the achievement of the desired end. Certain special measures will be necessary to ensure early independence as regards war-material.
- (9). Contribute to a greater extent than heretofore towards the maintenance of the Empire's command of the sea.

A DIVISIONAL SCHOOL FOR OFFICERS IN THE FIELD IN 1915-1916.

B7.

CAPTAIN A. V. GOMPERTZ, M.C., R. E.

Part I.—Genesis.

When the Kitchener Divisions first took the field in France, they were of a youth and newness in Military Training which is unparalleled in the History of the British Empire.

In the South African campaign Volunteer units took part which were of comparatively recent formation, and many of whose men had scarcely forgotten the feel of civil apparel and whose rifles still felt cumbrous. But in France in 1915 were to be found entire Divisions, formed and modelled on regular lines and complete with horse, foot and guns, which had not existed even on paper nine short months before.

Many units formed in September 1914 were in France in June 1915; more than one complete Division fought hard aud sustained a full share in the abortive offensive of September the 25th 1915 before it had celebrated its first official birthday. Such an one was my own; and its growth to maturity was amazing in its speed.

Six weeks after the war began, certain officers took up their residence in the colony of hutted camps at Z——,but lately vacated by some portion of the "Old Contemptibles." With them they imported certain clerks, certain large stationery boxes crammed to the full with Army Forms and hieroglyphic Returns, a certain bare modicum of equipment and of Ordnance stores as variegated as Joseph's coat, "et praeterea nihil." Scarcely had they settled down in their wood-walled tin-roofed offices, when Kitchener's Army began to arrive, plain-clothed, hungry, and clamorous.

Many more Officers came: "dugouts" in ancient uniform, "backwoodsman" regulars caught in far distant colonies or alien countries by the clarion call of war, territorials, special reservists.

Temporary-Commission officers too came in flocks: some

from courses of instruction that had barely run to weeks, some straight from their civil avocation, subalterns of all ages from fearless fifty to simpering seventeen.

The rank and file came in batches, drafts and hordes, conducted for the most part by re-enlisted Non-Commissioned Officers; stouthearted old veterans of many a campaign, secretly delighted to put off the years for a while, shewing many a bar of ribbon on their old but scrupulously clean jackets.

The men were magnificent. The first contingent of all those who have freely volunteered to fight, they were men whose whole hearts were in the war, who had been the first to lay down everything in the cause of their country; and whose single aim in life was to become efficient soldiers as quickly as possible, so as to take on the boche confidently at the game he had begun.

Now we have sleek, long-haired, State-fed, Conscientious Objectors: then the most feared punishment that we could mete out was to mark a man down not to accompany his unit to Prance.

After the men came the horses, of all and every kind from stately Shires to Milkmens' cobs: some dead with a day's work, others in first rate condition in the field to this day. They came haphazard from the necessarily unsettled buying organisation of those unsettled days: it was only at a later date that big drafts of half-broken Argentine mules regularised the supply of draught animals, and, incidentally, reduced the mounted establishment temporarily to despair. With them arrived assortments of harness and vehicles not all of which would have stood comparison with War establishments, but they served their purpose well and allowed invaluable practice before mobilisation equipment was finally issued in full.

Followed, three months of seeming chaos; but although the machinery of Training clanked and creaked and clattered as it moved, nevertheless it worked on unremittingly all the time. By early 1915 the last of the extempore blue overcoats and forage caps were back in store, units stood erect in complete khaki, and Company Training was in full swing.

In May and June began higher Training, and with it came a wealth of full-scale equipment that we had sighed for many a time before: string traces and three sets of wheel harness were a thing of the past, as were D.P. rifles and weird unorthodox transport.

But Divisional Training, the finale, was still an unrealised ambition when the code telegrams grew frequent. On but one single occasion did the Division parade entire, and that was to march past His Majesty the King. In mid-July, very shortly afterwards, came the longed-for orders to proceed overseas on active service.

On July the 19th we were in France. On August the third our Engineers were already in the line, having been lent to other Divisions, and our Infantry were doing 48-hours spells in it by turns under the tuition of older hands.

On September the third for the first time the Division "went in" as a unit, and was given its own sector of line to hold alone and unaided against all comers.

There was a prevalent saying in those days to the effect that "You cannot make an Non-Commissioned Officer in a year." Three years would have been nearer the mark.

How long then does it take to make an Officer?

In the piping times of peace Woolwich and Sandhurst alike said "Two years;" and after that, for at least three years more of commissioned service, one was in training one way or another.

Technical training, social training, Military training, all these were carried out in the unit and by the unit, and only after five years or so of further education did a young officer begin to be considered as fledged at all.

Wherefore it is easy to see that in 1915 the twelvemonth veterans of a Kitchener Division must have lacked somewhat in finished knowledge, however workmanlike and well spent their eventful first year might have been. But in August, September and October 1915 each officer, non-commissioned-officer and man was far too badly needed in the line to allow thought of sparing him for other matters.

The preparation in August, the attack in September, and the readiness against counter-attack in October, held all units more than fully occupied; and kept all organisation and endeavour alike Concentrated on one thing only:—the front line.

Not until November was there time for a breathing space: in cold, damp, mud-ridden, rain-soaked November it became fairly evident that, in Flanders at least, there could be no more active operations until next spring should dry the earth again.

Then, High Commanders took thought unto themselves; and the fiat went forth that Schools must be formed, that advantage must be taken of the lull in active warfare to make good as many as possible of the shortcomings of one single twelvemonth's hasty training. And so it came about that late one evening a despatch rider brought to me an order to visit Divisional Headquarters next morning, with a view to forming a Divisional School of Instruction for Officers.

Part 2.—Policy.

Next day, and for one day more after that,—for things had perforce to be done with swift speed—came conferences with the General Staff anent the school, its formation, its courses, and its scope.

It was no easy matter to formulate in two days every detail appertaining to these things. In the Division were over six hundred officers of whom not fifteen per cent were Regulars, or even Ex Regulars. Indeed, excluding the Divisional and Brigade Commands and Staff the percentage was probably under ten.

Amongst the remainder there were some territorials, Special Reservists, and ex-Volunteers; but the vast preponderance were Temporary-Commission Officers of anything from a month to a year's service, many of whom had, through the exigencies of Establishment and the campaign, already risen to captaincies and even to Field rank.

It will be easily seen then that there was promising, or rather overwhelming, material for a School of Instruction.

Here, however, the time factor had to be seriously considered. Reasonably we could count on four months of comparatively

uneventful and stationary warfare: with great luck we might get six. The latter eventually proved to be our fortune, since the German offensive in the west in 1916 was confined to their unfortunate venture against Verdun.

True, the Division was continuously in the line all those six months with one brief break of less than a fortnight. But in our sector of line there was "Nothing to report", we never attacked, nor were we ourselves attacked, save for some mining by both sides and some trench raiding on our part.

The time factor therefore was very unfavourable, in regard to the large number of incompletely trained officers which the Division possessed

Our Technical Troops however had a greater proportion of regular officers than the other arms; and the Gunners and Sappers had for the most part enjoyed the benefit of more individual instruction than their brother officers in the line. Obviously therefore, Artillery, Engineers, Corps, and Departments, were to be ruled out from the scope of the School with a stroke of the pen. Remained, the Infantry, Pioneers, Divisional Cavalry, and Divisional Cyclists, and the question of how many to take in hand, and what to teach them in the time.

At this point of the deliberations, local considerations assumed great importance.

We were already in the line defending it: our sector was notoriously one of the worst in all the British area, consisting of a despairing morass of lowlying ground that was hardly dry in summer and was an absolute marsh in winter, where a trench dug overnight might hold five feet of clear water the next morning.

Preparations for the September offensive had been allowed entirely to preclude the possibility of the wide system of trenches being converted into one of breastworks:—a work which should have been carried out months before had the men or the time been available, which they were not.

Already in November the whole line was commencing to fall in bodily, and the oncoming winter threatened to render the trenches untenable equally from exposure to shells and bullets and to the rigours of the weather. There were no dugouts: one could not dig in that waterlogged soil: lean-to shelters with varying degrees of protection took their place. These were now becoming flooded out at an alarming rate. The Commanding-Officer of one battalion was killed by a rifle grenade which pierced the roof of his own hastily constructed (and badly made) quarters.

Moreover the extremely short period of training of the Division at Home had made the fieldwork practice of all but its Engineers and perhaps also of its Pioneers exiguous to a degree-

Furthermore, it is fair to say that the primary axiom that "The Infantryman must make his own cover" had never during our training been adapted to the exacting conditions of the present campaign: nor had it been pressed home in proportion to its importance. This was possibly due to the prevalence of an older school of thought amongst some of the older of the unit commanders.

Some formations entered the field with a naive belief that the 2½ per cent* of Engineers in the Division could carry out alone all the necessary field work for them: others, better informed, still failed to realise how very much of present day fighting is pick and shovel and handsaw work.

Fieldworks were therefore the first essential of the school: not so much actually to train the Division for future fighting as to enable it to cope with very present evils and very growing ones; and to make its own life in its own trenches livable.

As regards Tactical Training, concentration upon that could wait awhile. We were not likely to conduct attacks for some time, neither were we likely to be attacked by the enemy just at present. Later on, when the Division should be better qualified to meet its present difficulties, tactical training might be

^{*}Of actual Sappers, including Non-Commissioned-Officers and not including Drivers whose sole work is with their teams, the number in a Division is about 3×166 , i.e. 500 in all, or $2\frac{1}{2}$ % of the 20,000 men in a Division.

seriously and thoroughly taken up; then also the time for its need in practice would have drawn closer.

After Pieldworks, a subject needing very early attention was that of Co-operation.

Bear in mind that the first postulate of successful co-operation between arms is a certain sufficient understanding of each others' work, such as will ensure the co-operation running smoothly with all the necessary give and take. In our crowded and all too brief nine months in England, there had hardly been one hour available for the proper study of this subject: each arm had been so thoroughly and over-fully occupied in teaching its officers and men their own class of work and none other.

The basest and shortest of discourses had been possible on the employment of the other arms. Now was there time to amplify them systematically. Lectures were arranged for by officers of each branch of the Service: not upon their own work alone, for time forbade; but upon their own work as regards co-operation, and chiefly upon just so much of that as each officer of another branch should know within a Division.

Flying Corps, Artillery, Engineers, Medical, Supply, Transport, were all dealt with; in each case by those who were well qualified to lecture upon their own particular branch.

After co-operation, a small amount of what might be called "General Education" was legislated for: the sort of things that one used to learn from one's adjutant in peace time, such as official correspondence and the like.

Two more subjects, lightly touched upon, completed the scope of the course.

One lecture and one afternoon's practical work were set aside for Trenchmortar work, carried out by a minor trenchmortar school which was in being alongside the proposed Divisional School; and one lecture, to be given by an expert, was allotted to tactical bombing work. Lastly, throughout the whole course, one aim was to be kept in view; and that was, not only to teach, but "To teach to teach". Each lecture was to be given so that its recipients could deliver it again: each piece of practical work was to be carried out, investigated, and familiarised, in such a way that those who performed it could teach others afterwards the correct way of doing it.

Each officer (and, later, non-commissioned-officer) who should attend the school was to be a picked man: one selected for his power of assimilating and re-imparting instruction. On their return to their units, the intention was that they should give their own officers and men as nearly as possible the full benefit of what they themselves had received. With this end in view a lecture was to be given on lecturing: notes were to be insisted on throughout the course though never dictated verbatim; and relevant questions and discussions were to be encouraged to the fullest practicable extent.

Remained only, to draw up the actual course and to settle the minor details of the programme.

Three fieldwork courses for Officers only were to come first. Each was to last for fourteen working days; and each was to include two officers from each battalion and one each from cavalry and cyclists. After those three classes, assembled to meet very urgent present necessity, the course was to alter and expand.

The later classes were to be of twenty eight working days each, and there were to be as many as circumstances permitted. Only one officer from each unit was to attend, but, in addition to these, two Non-commissioned officers were also to come from each unit. Fieldworks were almost to disappear, and Tactical Training was to take their place.

The Policy of the School had thus been definitely laid down, as:—

- , 1. Firstly, Fieldworks, and later on, Tactical Training, as the Bulk of the Course.
 - 2. Secondly, Co-operation, to a lesser extent.
 - 3. Thirdly, General Education, in two or three short lectures

- 4. In all, and through all, "Teach to teach", i. s. to ensure the freshly acquired knowledge being as quick-ly and as completely as possible promulgated throughout the Division.
- 5. Lastly, Non-commissioned Officers to attend after the expansion of the course.

The reason that Non Commissioned Officers were not detailed for the Fieldworks Course was that it was considered most essential at that stage of the proceedings to sacrifice other considerations to securing the utmost possible individual instruction for officers in fieldworks; and large classes would have militated against this.

Then came the minor details.

It was decided that the School was to be a complete unit with myself as Commandant with full powers, as well as Fieldworks instructor: all officers were to be seconded entirely from their units for the duration of the classes; and they were to live at the school.

The Staff were generous. A complete section of a Field Company Royal Engineers was placed at my disposal for the three Fieldworks classes; and in addition to all the preparatory and other work it did, its subaltern and senior Non Commissioned Officers proved invaluable as assistant instructors in the outdoor work for increasing the amount of individual tuition practicable.

Tools, stores, and explosives, were freely given: whatever was asked for was forthcoming at once.

A village School, unfurnished save for two wall-blackboards, was borrowed in the little hamlet of L.....; and, with the aid of the Royal Engineer Section, it was metamorphosed in 48 hours into a most creditable lecture hall, complete with benches, tables, and rostrum.

Five days after the order to form the school had been received, the Divisional Commander gave the first class of Officers their Opening Address

Part 3.—Anabasis.

THE ANABASIS.—The School commenced its active work on

November the 22nd 1915; and the three Fieldwork classes ran their time successfully and uneventfully.

L....... was a good spot for a school; at the junction of a main and a branch cross-road, very accessible, and near Divisional Headquarters. Nevertheless it was very quiet save for the continual passing of troops, and for the perpetual rumble of the artillery two miles away. Very few troops were billetted there, a battalion at most; and thus there remained sufficiently good accommodation to secure each office: pupil a comparatively comfortable, if diminutive, room to himself. They messed by Brigade Groups, two in private houses, one in an Estaminet.

In all school courses, and especially in high-pressure work like that of those days, it is an essential that the learners should have at least a modicum of comfort. It is an application of the trite old "Mens sana in corpore sano":—set the bodies at ease and the minds will be active and receptive.

L......, with its comfortable little houses and its cheery mess rooms, provided a vivid contrast to the squalid discomfort of the line in those days; and compared much more than favourably with the average run of "Rest" billets behind the line too.

So that the members of the class, apart from the admitted benefits of their instruction (of which more later), were well aware that they were pro: tem: markedly better off than their units in the line or in rest: they enjoyed the added comfort, and they worked automatically better.

Another thing greatly appreciated by the Fieldwork classes was the regularity of their work and hours (quite apart from the almost complete immunity from danger) after their very precarious days in the line.

As will be seen from the timetable given later, each day was the same. First came a couple of hours of "Mental pabulum", then five hours or so of the healthiest open-air exercise imaginable with a very brief break for a haversack lunch, and with half an hour's lorry ride at each end of it. After that came tea, and then one more hour's lecture: dinner was always at 7-30. Finally there came with absolute regularity perhaps the most appreciated thing of all, viz a good long night's rest in a real bed.

After the day's work and dinner everyone was so healthily tired that sitting up late was unknown; and by the time the class returned to their units they were not only the better for their training, but they were physically fit for anything, as well.

The first fortnight's work was a very heavy one for the writer. With the exception of some of the co-operation and general education lectures, the "Lot fell upon Matthias"; and Matthias was the Fieldworks Instructor.

Working hours were the same each day, to wit:-

8-0-8-45 First Lecture.

9-0-9-45 Second Lecture.

10-0—4-0 Outdoor work, sometimes preceded by a ten-minute dissertation indoors.

5-30-6-30 Evening, or Third Lecture.

Two out of the three lectures were on fieldworks every day bar two, and on some days all three were on that subject. Consequently the lectures for that first fortnight had to be prepared and worked up at all odd hours: often the teatime interval saw one working up the evening lecture to be delivered an hour later.

The second and third fortnights however went by far more easily, since there was nothing for "Matthias" to do out of hours except slightly to amend lectures already worked out and delivered once.

In the short space of fourteen days there was little time to descend into the more minute details of fieldworks, except for the simplest and most universally necessary ones. Principles however were taught at some length. The policy was therefore rather to instil into the class sound principles anent fieldworks and the materials for them, which they themselves could adapt to any case which should meet them afterwards: the outdoor work consisting of simple illustrations, and those all being phases of work which were badly needed in the line at the time or likely to be so.

They were taught sandbag work first of all, and with some elaboration, this being their task night and day whilst in the line,

Revetment was studied systematically in principle, and the commoner kinds were all carried out in practice; for this too was a perpetual task in our woebegone sector of the defence.

The use and abuse of the tools and materials commonly in use was gone into as far as time permitted.

The proper use of timber in the simpler cases was taught: how to get most strength for size, how to avoid waste and wasteful over-strength, how to ensure beams and struts actually doing their right intended work and no other. In this connection stress was laid on the fact that the seriousness and gravity of the results of waste lay not so much in the value of the timber itself; but far rather in the man-power expended in bringing it up to the line through the long communication trenches or over the open, and in the often-attendant casualties.

Elementary principles were well subbed in in the matter of timber; and full warning was given of the horrid fate which eventually befalls the surprisingly large number of people whose one idea of "timber" is nine by three used on the flat.

Some time was spent over wiring: this being a notable deficit in the training of the Division as it left England. Wire drill was taught in detail, having due regard to the two essential principles; which are to have a perfectly organised party, each man of which has a clearly defined individual duty, and to have as few people as, practicable outside the trenches at the same time.

Service explosives were taught to a modified extent: designedly sufficient to inculcate a wholesome and not contemptuous familiarity, which would enable the learners to use them at a pinch without fear of mistake or accident and the cost entailed.

Trench Drainage was studied on sound if simple lines: that too was a crying need in our section of front. Not only were we in what was daily becoming more and more of a marsh; but our front included the stinking graveyards of Neuve Chapelle and Richebourg L'Avoue where the buried dead were few in number. To keep that land as dry and drained as might be was vitally necessary to health.

In addition to Trench Drainage the class were taught to lay and fix trenchboard ways on elevated frames where drainage could not be coped with, such as at the crossings of small streams and ponds.

One evening lecture was devoted to the "Most prevalent (Fieldworks) evils in our present line, and how to combat them".

The use of the commoner standard stores was gone through in theory and in practice: such were the standard lean-to shelter frames supplied in bundles of members which could only be assembled correctly in one way; and there were standard readymade firesteps.

One day's bridging was done: a pier bridge being constructed, mainly for the purpose of illustrating the correct use of timber in many ways.

The siting and construction of machine gun emplacements, closed and open, was also gone into indoors and out of doors: the laying out of trenches was done by night and by day.

Amongst the general principles, a lecture was given on the siting and construction of a system of trenches. This was illustrated by successful and unsuccessful instances on our own front since the early days, with their later developments.

One thing which was dwelt upon in one lecture and afterwards each day throughout the course, was the Organisation and Control of Working Parties. Here again the Division had started at a disadvantage. Smart as could be desired upon the parade ground, they had never done enough of fieldworks to learn the basic importance of perfect organisation and ever-watchful control to a party at work.

Forethought in calculation and distribution of tasks, foresight in having all tools and materials ready or close at hand, forecast throughout the work so that none of the party might be temporarily idle and so that all should be able to give the best value for their time: these things were thoroughly inculcated in theory, and were demonstrated each day in practice.

Lastly: it was impressed on each member of the class that his only examination after the course would consist of his own

work in the line when he got back to it; and that the standard of his marks obtained in that examination would be none other than the standard of his own mens' better comfort, better health, and better protection, later on. This final dogma was almost superfluous: the tenor of practically every officer who came to the school in those dark winter days was "We want to learn all we can just as fast as we can, why, oh why, weren't we taught it all before?"

A sine qua non of the Commandant's office was naturally the power to return to their units at once and without question any officers or N.C.O.'s who were not making good use of their time, or who appeared unlikely to show good results for their training. In practice this was not found necessary in one case even, amongst the 80 odd officers who attended the fieldworks classes, nor of the 54 officers and 108 N.C.O's who came to the later courses. One could not have had more ideal pupils.

The outdoor work was naturally far the most enjoyable time. At first I had requested to be allowed to conduct that in the line itself, to add reality; but that was vetoed, and in any case far too much time would have been lost daily in doing the last three quarters of a mile up to and back from the treuches.

A welcome compromise was arrived at; and a large and urgently necessary but only quarter-finished redoubt in the Second System was given to us as a Fieldworks ground, about two miles from the front line trenches. The School itself was about four.

In and around that redoubt it was possible to carry out almost every class of field-work we wished to. And, best of all, it helped us to keep to the principle laid down by the General Staff that, as far as possible, every bit of work done by the class should be of actual use in our defence system. This had an encouraging effect on the class, and would have made them still keener on their work, had they needed it.

For Transport, again the Staff were generous. Two threeton lorries were allotted permanently to the School, to carry class, instructor and assistant instructors, and tools up to the work and back each day; and to fetch and carry stores when necessary. The transport of the R.E. Section drew our rations for us daily.

Those outdoor days were not unproductive of incident. I can only remember us once being actually shelled by the enemy whilst work was in progress; but on two occasions we were badly served by prematures from an eight-inch battery behind us.

The places round about however were not so fortunate. One field battery about half a mile away was given a rain of "Crumps" (5.9") for the whole of a midday and afternoon before our sympathetic eyes; and more than once the neighbouring village of R....., a mile away, was heavily plastered with 8" and 11" stuff.

It was on one of the latter occasions that a certain company commander amongst the class ventured to express his opinion loudly to me on the extreme utility of the fortnight's course.

Naturally I assumed my best magisterial smile for the nonce, and agreed with him unreservedly and unsuspectingly.

The "Explosive" days were full of excitement too. Obviously, to save time and to promote individual instruction, the class would be divided into about three groups for the practical work, each with an Royal Engineer Instructor.

They got quite good at the drill of safety precautions; but it was uncanny how often, having lit his own fuse, a man would start running away right into a charge that someone else of some other group had just touched off! However, we succeeded in avoiding all accidents.

Bridging day was eagerly looked forward to too, probably on account of the entirely new nature of the work. On these occasions we departed from the usual redoubt, which needed no bridges. The selection of a site however was simplicity itselfs one merely went to the nearest gunner brigade commander, and asked him where he would like a bridge fit for his guns. Flanders being full of big dykes and of little streams, there were always

at least two or three of the Divisional batteries wanting bridges between their alternative positions. Thus it befel that more than once we made ours for and alongside batteries that were in action all the time.

To an Instructor there were two features of the Field-works courses which were more attractive than any others.

Firstly there was the watching of the practical after-results of one's labours in a degree that is not often vouchsafed to dominies.

On Sundays during the first three courses, and on other days too in the later ones when time was freer, one could go down to the familiar line and watch one's ex-pupils actually at work, or see the results of their newly acquired knowledge in their own bits of line, and aid and criticize again when asked to.

Secondly, the kindly Staff gave one carte blanche on Sundays and holidays, backed up by telegraphic and telephonic sesames, to visit any other Division's sector of the line that one had a mind to; in order to compare conditions, to get new ideas, and to watch other peoples' methods.

That was most interesting; and was also productive of more than one very pleasant day wandering round strange pieces of line with old sapper friends of earlier days.

It also led on one occasion to walking unguardedly and unwittingly straight out into No Man's Land through an opening which looked like another fire-bay; but the boches opposite must have been asleep or busy eating at the time.

All those first six or seven weeks the work was exceedingly hard and exacting; but it was most gratifying. The officers of the classes varied in age and kind from men nearing forty, schoolmasters, business men, one shipowner, to youths who had been at school when the war broke out. But they one and all came keenly and eagerly to learn, and you cannot get tired with pupils like that.

When the third Fieldworks Class was over and some eighty officers had been grounded in that subject, the School was

expanded, and Tactical Training took the place of most of the fieldwork. Military Operation of all kinds were studied, mapreading and field sketching were introduced, tactical schemes and reconnaissances formed the bulk of the outdoor work.

By this time the Division had been given a few short days of "rest" out of the line and had moved back; so the school went back too, to S....., some twelve miles in rear of L....; and pursued the Muse of Learning in much greater comfort.

Still better billets were the order of the day: a (comparatively) lordly Town Hall succeeded the little village schoolroom of L.....; stands of ancient chassepots and flamboyant certificates of merit of the local Sapeurs-Pompiers adorned the lecture room walls in lieu of children's illustrated oleograph alphabets.

The country around was charming in the quiet level lowlying way of Flanders; and many a twilight walk or ride were to be had alongside the great sleepy canal that wandered from the picturesque old fortifications of Vauban out amongst the tranquil fields.

When we went out to work too it was not to shell-torn devastated areas of desolation; but to peaceful cultivated fields and pretty red and white walled, blue roofed villages.

My own time was much freer too now that Fieldworks were practically dispensed with, and only replaced as regards myself with a fair share of the tactical work: the change was very welcome after the concentrated Labour of L........

The course in S....... lasted three weeks, and was ended somewhat hurriedly by the town being invaded by another Division in whose allotted Billetting Area it lay. Forward we went again, and, in the interim, if one may again intrude with a personal note, came six memorable and most pleasant days back with my own company again after a long absence. These were spent in a new piece of line which must be very familiar to those who were in France with the I. E. F.:— from Neuve Chapelle to Fauquissart.

Then the School Headquarters assembled again abortively at E....; out of which place we were ruthlessly turned by yet another incoming Division, the day before the class was due to arrive.

After some few days of chaos we installed ourselves finally in M...., about seven miles from the line on our old front.

M...... is a fair sized town; and here the expansion first made at S...., was easily maintained; and the standard of comfort was even better than that at S......

At this point the School Staff increased and multiplied. A Senior Colonel came as Commandant, another Field Officer as second-in-command and chief Instructor, a subaltern Drill-Instructor arrived, and "Matthias", descending with joy to the position of adjutant and second instructor, found labour much lighter and leisure much longer than at either of the previous places.

The constitution of the classes was as that at S........... Only one officer came from each unit, but our newly formed Brigade Machine Gun Companies were included which gave 18 officers in all, and two Non-commissioned officers came with each officer. That made a class of 54 for each course.

Tactical Training was now the first order of the day. March was beginning: the fighting season was drawing closer; and we aimed at getting through as many solid, four-week courses as circumstances should allow before the Division should be called upon to take part in a big offensive, or, mayhap in a rigid defensive.

Outdoor tactical schemes were carried out two or three times a week: co-operation was taught in theory and thoroughly embodied in the schemes at least on paper. The key note sounded was that although trench warfare might always occur intermittently, between its spells there must come long or short intervals of comparatively and even absolutely open fighting. Moreover, as well as recapitulating the long dormant art of open warfare, we endeavoured to combat certain unavoidable results of protracted months in a stationary front of trenches;

the two chief of which are probably monotony of daily events, and a pardonable laxity of turnout.

Trench warfare on an uneventful front is the apotheosis of routine fighting: almost everything occurs on regular and foresceable lines; even to the daily shelling, the daily sniping, and the daily casualty list.

At one time in those distant days of 1915 and early 1916 we could almost tell within a minute when the first boche shell of each day would fall upon our lines, and also when the last had fallen until next day. Only the bombardments with larger pieces than Field Artillery were of irregular cadence; and after a time even they became somewhat regularised. Each time a unit entered the line for a spell it would forecast with some accuracy exactly what would happen during its time "in", even down to the rough numbers of its coming casualties in officers and men.

All this was highly conductive to a certain stagnation of the military mind, to the prostitution of the art of war into a regular and unvaried, if dangerous and uncomfortable, drill.

The trenches too are an enemy of smartness and of discipline. You cannot remain clean and well turned out when you live in an unfurnished hole at the bottom of a marsh; neither can you double to receive an order nor spring to attention when you are knee-deep or more in oozy mud and water.

To enadicate the stagnation, Initiative was aimed at now: quick thinking, quick grasp of an unrehearsed situation, quick action to turn it to advantage.

To combat unavoidable laxity, drill was brought to the fore. Every day the class was turned out on parade in drill order, Officers and Non-Commissioned Officers together, and for at least one hour daily they went through, under the tuition of the Guardsman Drill Instructor, all the barrack square evolutions that belonged in their cases to far earlier days.

For the nonce Trench Warfare was forgotten; and Officers and Non-Commissioned Officers were taught to look ahead to the brighter days of open warfare when the boche line should be broken at last.

For "Matthias" the greater leisure of these days at M........ was most acceptable: with two good horses and only seven miles to cover, it allowed of more frequent visits to the line than the days at either L...... or S.......... had permitted.

By that time one could really see an appreciable change for the better there, however little of it might have actually been due to one's own efforts. Breastworks were growing everywhere, trenches that could be drained——and these were few indeed in number——were being drained; and dry dugouts, or rather splinter-proof lean-to shelters, for one could not dig in that sodden marsh, were far commoner.

The communication trenches too were vastly better, and the old difficulty of getting into or out of the front line system was almost a thing of the past.

Definite programmes of work had been systematised and were being methodically carried out, in great contrast to the occasionally haphazard practice of earlier days. Moreover the quality of a good deal of the Infantry's work was noticeably better.

The two courses of twentyeight working days with a brief interval of three days in between them, progressed smoothly and uneventfully at M——.

In peacetime the town is a paragon of respectable quiet commerce and uninterrupted tranquillity: in wartime, although so near the line, it has remained singularly undisturbed since the German cavalry, knocking at its very gates in October 1914, were driven back once and for all. Its air of old-time peace, together with its high standard of comfort, were a great asset to the school work, for the reasons already pointed out.

We seldom had excitements at M——. Occasionally an errant boche machine would pass over-head en route to drop nastiness on an Army Headquarters further back, followed by long series of the white enlongated bursts of anti-aircraft shrapnel.

At those times the whole population would be in the streets, gazing upwards regardless of falling bullets and shell cases and the chance of the boche perhaps parting prematurely with his

bombs over M——; and, as the inhabitants were not overadept at identifying machines, each pursuing British plane from No. 16 squadron would be hailed with "Ah, le voilá, le sale boche!"

On the 29th of February 1916,—auspicious date for the superstitious—one enemy aviator had his tank badly pierced by our shrapnel, and came down in a field just outside M——; that was a red letter day for the worthy bourgeoisie.

The writer had the doubtful pleasure of conducting the boche officer observer from his damaged machine to the office of the local A. P. M. in a commandeered car; and for days afterwards Madame the Landlady could talk of nothing else.

I believe it was the Commanding Officer of the Archie battery which brought that machine down who, upon being asked what was the motto of his own branch of the Service, replied "Its "Siste Viator" and we have it painted on all the shells."

After two peaceful months the last week April duly arrived, and with it the Division at length came out of the line for an appreciable period: to be fattened up for the Somme, though we knew it not then.

After a couple of days to shake itself together and the mud of the trenches off its feet, it moved back to the distant Army Manoeuvre Area, where it performed great and open evolutions in the bright fields of late spring.

It was decided that, owing to lack of accommodation in the new area, the Non-Commissioned Officers of the class should rejoin their units. The Commandant and the Drill Instructor also returned to theirs; leaving the two Instructors with the Officers of the class to proceed to a delightful mediaeval French Chateau close to the manoeuvre terrain.

The writer was the first to arrive there in his general capacity of adjutant and billet-distributor; and had to give a deprecatory negative to madam's first question of "Y-a-t-il des generaux?"

Madame bore an ancient and honorable name and title: Monsieur bore in addition deep scars and a permanent limp from 1870 and the lapel rosettes of many decorations; and it was a new experience for them to harbour a mere "Commandant," a "capitaine" and eight youthful subalterns. But host and hostess were perfectly charming; and one of the brightest periods of all one's stay in France was the week spent at that stately chateau whose great green trees and peaceful lake had delighted Le Roi Soleil and whose halls had echoed to the girlish footsteps of Marie Antoinette.

During that brief spell of seven days or so, the Division carried out the phases of open warfare with the co-operation of all arms. Inter-brigade contests came first, and then battles of the Division against various objectives and a skeleton enemy.

The School followed the manoeuvres day by day, digested Operation Orders, conducted and reported upon reconnaissances, and appreciated situations: all its work being corrected and discussed at an ensemble every evening

These enjoyable days were indeed few in number, when there came, somewhat abruptly, the order to get ready to go south. Not all of us knew what lay behind it, but a good many of us guessed, to some extent at any rate. On the third of May the School broke up for good and all: Instructors and Officers rejoined their units hurriedly, so as to be in good time for the train journey southward to fresh lands that we knew not.

And so, for us, ended a most engrossing six months; their finish graced with the brightest hope of all, that of seeing all our labours put in a very short time to the supreme test that War can find.

INSEOTS AND THEIR RELATION TO DISEASE.

BY CAPTAIN A. C. MUNRO, I. M. S.

This article originally took the form of a lecture to young officers who had recently arrived in India. This is my apology for the elementary facts given, with which most men who have lived some time in this country are quite familiar. The bearing of the insect world on the health of man and his domestic animals, which was not guessed at twenty years ago, is to day accepted as a matter of course, and governments have spent millions in fighting the insect plague; with the result that large tracts of land all over the tropics have been changed from "white man's graves" to habitable colonies.

No better instance of this exists than the history of the Panama Canal. In 1881, a French company headed by De-Lesseps, the engineer of the Suez Canal, started on the work. For eight years they struggled against malaria and vellow fever, losing more than 50,000 workmen from these two diseases. At the end of that time, with less than a quarter of the work done, they gave up the attempt. Fifteen years later, the United States took over the rights, and started operations by a vigorous campaign against mosquitoes. 90 medical officers and 3000 sanitary workmen were employed on this task. The canal zone was divided into districts, each complete with its staff of doctors, inspectors and sanitary gangs. These were employed in destroying the lurking and breeding places of the mosquito, in killing the larvae, in draining, in bush-cutting, in concreting difches. So complete were the measures, that cattle were not allowed anywhere near ditches, marshes or streams, so as to avoid the small foot puddles that they make, and in which mosquitoes might breed. The result of this work was miraculous or rather it was exactly what one would have expected. death-rate from malaria among the workmen was reduced to less than one per thousand. Unmolested by disease the work progressed and, as we all know, the Panama Canal is an accomplished fact.

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The subject of Insects and Disease is of vital interest to us in time of war. When large bodies of men are crowded together in billets or camps, living at close quarters with an insanitary native population, the house-fly, the mosquito and other insect pests levy their heaviest toll in sickness and death. Troops from distant parts of the world introduce new diseases to the other combatants. Also in war it is often necessary to send young, unseasoned troops to the tropics, where they fall victims to the endemic diseases in large numbers.

Instances of this have occurred in every war in history. It is difficult to cite campaigns in which the death-rate from sickness (largely insect-borne and preventible) has not been greater than that from casualty. The extreme example of this is the Walcheren expedition of 1809. In that year Britain made a combined military and naval effort to take Autwerp and the Scheldt. All we achieved was the landing of the army on the island of Walcheren, where it was smitten with fever. mortality from sickness was 350 out of every thousand effective while only 17 per 1000 of strength were killed by the enemy. the Peninsular War, we lost three times as many men by diseases as by the acts of the enemy; and it was estimated that every year more than twice the number of the whole army passed through the hospitals. But one need not go further back than the South African War or the operations in Gallipoli, Mesopotamia or the Balkans for examples of the way armies may be impeded by communicable diseases, many of which are conveyed by insect agency.

The Housefly.—An insect that has claimed more victims than the U-boat or Zeppelin is the common housefly. Flies have been shown to transport the germs of Typhoid and Paratyphoid, Fever, Tuber-culosis, Cholera, Anthrax and Plague, either attached to their feet, body or proboscis, or present in their interior or dejecta. Flies feed on the liquid or semi-liquid matter contained in excrement, wounds, sputum etc. No fly is free from germs; this can be demonstrated in the Laboratory. Now the fly is by no means the only insect that feeds on excrement and other sub-

stances that contain disease germs. But it is the insect which, having these habits, swarms in greatest numbers into our houses, invades our breakfast table, resting on our sugar and falling into our marmalade. The connection is so obvious that on purely theoretical grounds we should condemn the fly, even were the fact that he transmits diseases not proved up to the hilt by the scientist.

For instance, the result of a very interesting experiment shows how careful we should be not to cat fruit that shows signs of insect's visits. All the insects that visit excrement and decaying animal matter also feed on fruit. Some plums were taken, in which wasps and other insects had gnawed holes, and scrapings from the holes were examined by the usual bacteriological methods. In almost all the scrapings germs were found that occur normally only in human excrement. They had evidently been brought straight from the excrement to the fruit by the feeding insects.

Houseflies breed mainly on stable manure, but only when that material is in a moist fermenting condition. lays about 150 eggs in a batch on stable manure or other fermenting material such as rotting vegetable rubbish. Under the microscope the eggs are seen to be white shiny particles; long oval in shape. In about twentyfour hours in the tropics the maggot hatches out. This is a small whitish grub cylindrical in shape and tapering to a point at its head end. It moves about very actively in the manure and feeds voraciously. It grows rapidly and when it attains its full size (in about five or six days in warm weather) this actively moving maggot leaves its moist surroundings for some drier spot. Here it turns into the hard, brown, motionless chrysalis, from which in a few days the adult fly emerges. In yet another few days the fly is capable of reproduction. In temperate climates like England the whole period from egg to egg is about three weeks; in this country in the hot weather about twelve days.

Now from what we know of the fly's life-history, we have two ways of dealing with it. The first and most successful



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is attacking its breeding-places, destroying or preventing the development of the eggs and maggots. The second is trapping or poisoning the adult fly and preventing its access to our food.

The first method entails the proper disposal of filth and stable litter. In a dry climate the litter may be burnt, the best way of all; or if space is available it may be spread out in a layer four to six inches thick, when it rapidly becomes too dry for the maggots to live in it. In a wet country like France, this was impracticable. We had to bury the litter in pits, or else stack it and cover it with a layer of earth a foot deep, to prevent fly maggots emerging. This was the litter from our own horses. The French farmers' litter presented a more difficult problem. The ordinary French village house may be described as one large manure heap enclosed by stables, piggeries, a cowshed and the farmhouse. The manure is a valuable asset to the farmer and could not be burnt. By offering transport, we could often persuade the farmer to cart his fresh stable litter out to his fields direct, instead of throwing it on the dry and innocuous heap of old litter in the vard. Failing this it was usual to spray the litter two or three times a week with strong cresol solution or crude kerosene oil. The farmer always said that this poisoned his chickens but he never produced the bodies and we never paid for them.

In acting against the adult fly there is a variety of flytraps in use. Most traps depend for their efficacy on the fact that flies can easily find an opening in a concave surface but fail to find it on a convex one. A very simple one can be made with a wide-mouthed bottle in which you put the bait (some jam or a piece of banana) and a tin cone with a small hole at the apex. You rest the cone on the edge of the bottle's mouth with it's apex pointing down into the bottle. The flies crawl down through the hole into the bottle and are unable to find their way out.

The sticky fluid used on flypapers can easily be made by boiling up resin in linseed oil; this fluid can be smeared on the trunks of trees or the walls of barns or houses. A tip of use on

service is to smear the wire with which the bales of ration hay are bound with the fluid and hang the wires up until they are coated with flies.

To prevent flies picking up disease germs, their access to human excrement, sputum and to wounds must be absolutely prevented. This may be done by covering latrine filth with earth, or placing it in the incinerator as soon as it is passed. Or a flyproof latrine can be made by covering over a deep trench with close-fitting planks; at intervals along the trench, openings nine inches wide are left in the covering and these openings are furnished with hinged covers. Dejecta are passed through the openings and a sanitary policeman sees that all men close the lids on leaving the latrine.

To protect food from flies, all milk, food and fruit should be covered and kept in fly-proof larders or meat-safes. Fly-proof doors in this country should always be provided with springs, otherwise they will be left open by servants. The diningroom should be kept free from flies by wire gauze screens over the windows and chics in the doorways. Squares of muslin or mosquito netting weighted at the corners are useful for covering jugs or other food receptacles, but the muslin must not touch the food.

There is a fly like the housefly in appearance but smaller, which you often see about stables. These stable-flies are often driven into our houses by a storm of wind or rain. They are sometimes mistaken for young house-flies, but this is incorrect as all flies emerge from their chrysalis or pupa stage at their full adult size. This fly is a bloodsucker and can sting viciously. Its importance to us lies in the fact that it is believed to spread surra in this country among horses and camels.

In exactly the same way as the housefly, the bluebottles and greenbottles may convey disease germs to our food. The bluebottle, however, breeds not in manure but in fresh or decaying meat. In Flanders in the summertime the walls of the trenches are at places black with blowflies, owing to the hurried and imperfect way in which corpses are often buried. The remedy

deep internment of bodies, is obvious, but is difficult to arrange in the conditions of trench warfare when burial can only be done at night.

MOSQUITCES.—We come now to the mosquito. The most important diseases of which it is the proved carrier are Malaria and Yellow Fever. With Malaria many of us are familiar to our cost. It is calculated that in India it is responsible for one and a half million deaths a year.

Mosquitoes are broadly divided into two classes, Culex and Anophelis. The male mosquito is of no interest to us as he is not a bloodsucker. He is known from the female by his feathery, bottle-brush antennæ which stick forwards at an angle from his head. Of the two classes of female mosquitoes, the Anopheline is easily distinguished by the fact that she has two hair-like projections forwards from her head, one on each side of the proboscis; these "palps" are as long as the proboscis. In all other female mosquitoes, the palps are much shorter than the proboscis, often being so short that they look like a mere thickening of the base of the proboscis. You can see this quite clearly when a mosquito settles on a white tablecloth.

Yellow Fever is conveyed by the black-and white striped mosquito, Stegomyia fasciata, which is so common about bungalows in India in warm weather. It is essentially a domestic insect and always frequents the habitations of man. It is found even in the centre of big cities, and breeds close to houses in water-butts, gurrahs, etc.

Mosquitoes do not carry disease germs from one man to another in the simple way in which the housefly does. She does not suck up the blood of the malaria patient and then straightway pump it back into the first healthy man she bites. She has a much better use for the blood, which is her food. After feeding on malarial blood, the mosquito is not able to infect a fresh person with malaria for about ten days. During these ten days the malaria parasite goes through a definite stage of its life-cycle inside the mosquito, until finally the young, vigorous parasites get into the mosquito's salivary glands, close to the proboscis,

From here they pass down the proboscis into the blood of the next person the mosquito bites.

Just as in the case of the housefly, the best way of acting against mosquitoes is by attacking the breeding-grounds. The mosquito lays her eggs on the surface of water, sometimes singly, sometimes in groups After a day or two the larva hatches out, and swims about in a jerky way feeding greedily. The larva has to come to the surface to breathe, and in this position you can spot the Anopheline larvae from other kinds. The Anopheline lies horizontally along the surface, while Culex hangs down at an angle with only its tail end touching the surface.

Mosquitoes will breed in any collection of water, in ponds, tanks, marshes or the sluggish edges of streams; or in rain water that collects in old tins or broken bottles. But not in a swiftly-flowing current. One often finds them in the water buckets kept in barracks in case of fire, if these are not emptied or kerosened regularly; or in the tins of water placed under the legs of furniture as a protection against white ants.

To keep down mosquitoes, all these potential breeding-places must be attacked. Old tins and bottles should be flattened out and buried. The edges of streams and canals should be kept trimmed to prevent stagnant pools collecting. Tanks and ponds should be treated with kerosene oil, about a tablespoon to the square yard of surface. The oil spreads in a thin film over the surface of the water and chokes up the breathing tubes of the mosquito larvae. Floating branches of trees, leaves etc. must first be removed, as they break up the film of oil and so shelter the larvae near them. In the case of drinking water, sulphate of copper, added to the water in such small amounts as not to affect the human stomach, kills off the minute vegetable organisms on which the larvae feed, and so starve them. Even in the hottest weather, the mosquito larva takes at least 8 or 9 days to develope, so if you spend fifteen minutes every Sunday in watching the mali kerosening the potential breeding-places round your bungalow, you may rest assured that no mosquitoes will hatch out in vour domains.

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Some kinds of mosquitoes can be caught in large numbers in a very simple trap made by lining a large box with black cloth. You put the box open in a shady corner of the room either at night or first thing in the morning. The mosquitoes enter the box to sleep and in the middle of the day you shut the lid. You can kill the mosquitoes by putting in a little petrol through a hole in the lid which you keep corked up. Of course the trap must be aired before you use it again.

But for one's own personal protection against malaria, the careful use of the mosquito net and the regular taking of quinine are the essential measures. And remember that you get the best value out of your prophylactic quinine by taking it after a meal, and if in tabloids these should not be sugar-coated; also that the Hydrochloride is much better than the Sulphate. Unfortunately the Sulphate happens to be the cheaper and on that account is the sort usually supplied in Government hospitals.

I have already referred to the success of the anti-mosquito campaign in Panama. Equally wonderful has been the stamping out of Yellow Fever in the West Indies and America. To give only one instance, the town of Havanna was notoriously the home of this pestilence up to the time of the Spanish-American War. When the United States took over the administration of Cuba, they set to work to make Havanna a habitable town. By systematically raiding the breeding-places of Stegomyia, and by screening all Yellow Fever patients with mosquito netting to prevent mosquitoes becoming infected, the yearly number of deaths from the disease in Havanna alone has dropped from 750 to practically nil.

TSETSE FLIES.—An insect that spreads disease in somewhat the same way as the mosquito is the Tsetse Fly, a blood-sucking insect a little bigger than the housefly. Its taste in food is catholic, for though it prefers the blood of man, cattle or wild game, it is known to feed on birds, reptiles, amphibians and even amphibious fishes. It conveys the parasite of the fatal human disease, Sleeping Sickness, and of several diseases among cattle. The tsetse and the diseases it carries are confined to the continent

of Africa. The larva of the tsetse buries itself underground and requires shade and a warm, moist atmosphere for its development. These conditions (moisture and the shade of trees and bushes) are present on the shores of the Central African lakes and the upper reaches of the rivers Nile, Niger and Congo. These tracts are the much dreaded "fly-belts" which settlers avoid or hurry through by night when on trek with cattle; for the tsetse fly only bites by day. The principal cattle disease is Nagana or Tsetse-fly Disease, which is very fatal to horses, cattle and dogs.

As the complete destruction of the tsetse fly was impossible, the experiment was tried of making the inhabitants of the islands and lake-shores migrate inland. As they took their sleeping sickness germs away with them, it was hoped that round the lake a generation of flies would arise that had lost the infection. But even after their haunts had been deserted by man for two or three years, the tsetse flies were found still to be capable of infecting man with sleeping sickness. The reason turned out to be that many of the wild animals of Africa carry the germ of sleeping sickness in their blood without apparently suffering any harm. So these animals form a perpetual reservoir from which new generations of tsetse flies obtain the germs to pass on to man.

When this disconcerting discovery was made, it was even suggested that the wild game of Africa should be exterminated en bloc; but it is by no means certain that this would eradicate sleeping sickness and it is very unlikely that this drastic step will be taken.

SANDFLIES.—Much smaller than these are the Phlebotomi or so-called Sandflies which bite by night and spread Sandfly Fever. They are so small that they can easily get through the meshes of a mosquito curtain, and their bites are very irritating. Although Sandfly Fever leaves no permanent effects, it may affect military operations owing to the rapid way it spreads, totally incapacitating large numbers of men for several days.

VERMIN.—Leaving these comparatively attractive insects, we come to those classed as vermin, and start with the louse.

The louse is at present the object of tender interest to the army medical departments of all nations. It is the proved agent in the spread of Relapsing Fever, and it is fairly certain that the louse also transmits Typhus Fever. Now both these very dangerous diseases have appeared on one or more fronts in the present war. The Austrians have suffered from Typhus, and introduced the disease to the Servians through cases left at Belgrade at the time the Servians recaptured their capital. As long as our men are verminous, there is grave danger that Typhus Fever, introduced from outside may spread in epidemics in our army. And apart from the danger of disease, it is worth while taking some trouble over anti-vermin measures merely for the relief they give the soldier, whose lot on service is bad enough without this intolerable irritation and the sleeplessness it causes.

Before going into these measures, I shall say just a word or two about the habits of the louse. The body-louse lives in man's underclothing. It is also got in recently used bedding, but it is a delicate creature and requires a feed of blood at frequent intervals, so it cannot live far from its host. It flourishes in war conditions where baths and changes of clothing are infrequent, and where there are no opportunities to remove clothing and search it for vermin. The straw used as bedding in dugouts and in shelters behind the trenches literally teems with vermin.

Lice infected with the germs of relapsing fever pass on the infection to their eggs, so it is necessary to destroy both lice and eggs. The eggs are always laid on hairs, either the hairs of man's body or the upstanding fibres of the underclothing. For this reason woolen underclothing offers the most suitable medium, while silk next the skin is said to confer protection from vermin.

The precautions nowadays taken in France are roughly as follows. Each division has its baths, a steam disinfector and a laundry about a days march behind the line. The morning after a battalion comes out of the line the men are marched to the baths, hand in their underclothing, have their hot bath and then

receive fresh underclothing. Where possible the outer clothing is given half an hour in a steam disinfector or else is pressed with hot irons before it is given back to the men. The process is repeated at intervals while the men are out of the fighting line. The dirty clothing is washed at the laundry, where the work is done by French women, and is re-issued to the next regiment that arrives.

Some units use the insecricide called Vermijelli. Its ingredients are kerosine oil and soft soap. It is rubbed into the inside of the socks and underclothing and along the seams of the trousers. It may also be smeared on the skin. It is unpleasant stuff to use and is rather unpopular among the men, but it kills the vermin all right. Another way to use vermijelli is to soak the clothes in a solution of it after they are washed. They should not be wrung out too tightly, but allowed to dry so that the clothing is impregnated with the jelly.

Fire.—To go on to other vermin that transmit disease, the rat-flea is of course the carrier of Bubonic Plague. An epidemic of plague in a town or village is usually preceded by an epidemic of the disease among the rats. The fleas carry the plague germ from rat to rat, and when rats get scarce they attach themselves to man. In some experiments in Bombay, a cage of plague-infected rats was put in a closed pucca-built room a yard or two from a cage of guineapigs from which all fleas had been removed. As the rats died of the disease the fleas left their dead bodies and were later found on the guineapigs, all of which subsequently developed the disease. But if in this experiment the floor round the guineapigs was smeared with a layer of tanglefoot too broad for the fleas to jump across, all the ratfleas were later found caught in the tanglefoot and none of the guineapigs got plague.

The flea larva lives in dry rubbish or the dust in the corners of rooms. Extreme dry heat is unfavorable to the flea, and you find comparatively few of them on rats in the hot weather. For this reason, plague always disappears in upper India in the hot weather.

62 Insects and Their Relation to Disease.

BED-BUGS.—The very fatal disease Kala Azar which is prevalent in some parts of India is believed to be conveyed by the common bed-bug. The bed-bug is also accused of helping in the spead of leprosy, tuberculosis, anthrax, plague, relapsing fever and typhus.

The habits of the bed-bug are well known. In the daytime it hides in crevices of any kind especially in the joints of bed-steads, and at night comes out to suck blood. He does not always find a victim, but this does not trouble him, for he can live at least eight months without a meal. Any number of bugs can pack themselves away in inaccessible places between floor-boards or in cracks in walls. A badly infested room must be very thoroughly treated in order to kill off both insects and eggs. It should be fumigated with sulphur, and then some strong disinfectant should be sprayed into all cracks with a garden squirt.

Ticks.—The only other insect I mention in this brief sketch is the family of ticks. The tick is a fat, bulky insect and its body is enclosed in a hard shell. It has a very strong biting apparatus at its head end, and it gives a very poisonous bite. Ticks infest all the domestic animals, and most other mammals, birds and reptiles, but only a few species attack man. Among the domestic animals ticks disseminate the germs of some very fatal fevers among which are the Red-water Fever of cattle and Chicken Cholera.

The life history of the tick is peculiar. The larva, which looks like the adult in miniature, waits about on the grass till a suitable animal comes along, to which it attaches itself. After gorging itself with blood the larva drops off, and presently moults into the nymph. The nymph, if fortunate enough to meet a host, attaches itself again, feeds, drops off and moults into the adult. The adult's habits differ in two classes of ticks. The kind that attacks animals and conveys the infection of many cattle fevers attaches itself to its host and feeds and lives on him permanently. The female drops off to lay her eggs on the ground and forthwith dies. But the kind of tick that attacks man has more the habits of the bedbug. That is to say, it lives

in cracks in walls and prowls by night. The most important human disease carried by these ticks is a form of relapsing fever in East Africa. A tick once infected with the germs of this disease communicates them to her offspring to at least the second generation; so that her grandchildren may infect man again with the disease. The ticks live in large numbers in the walls of native huts in Uganda, so these dwellings must be avoided by the white man. The precautions against these iticks are the same as against bedbugs whose habits they imitate.

NOTES ON THE EMPLOYMENT OF REGIMENTAL SIGNALLERS.

With Special application to trans-border warfers.

пv

CAPT. N. M. CARRUTHERS, 30TH PUNJABIS.

The Training Memorandum for 1916-1917 says that in some Units the use of Regimental Signallers is most imperfectly understood. These notes deal with a few points in connection with their use and employment in the field.

Although it is primarily the duty of the Signalling Officer to organise the system of communication in a Battalion, every officer must know the capabilities of the various instruments and what signallers can be expected to do, in the same way that it is necessary for an infantry officer to know the characteristics of Cavalry and Artillery and how they may be best employed. The first section in Chapter II Field Service Regulations, India, clearly states the division of responsibility of Commanders for maintaining uninterrupted communication and gives us the principles underlying the whole of the intercommunication service. We are told that every commander, this of course includes section and platoon commanders, are responsible for (1) using all means of communication provided for them, (2) improvising the best possible means when the regular means are, for any reason, not provided, (3) establishing a headquarters of some sort. The first chapter in the Training Manual Signalling also gives the general principles of communication and should be read by all.

Between Brigade and Regimental headquarters there are three normal means of communication: (1) visual signalling, (2) despatch riders or runners; these are found by the headquarters which wish to employ them, (3) telephone.

Many officers have a very exaggerated idea of the Brigade Signal Section. A Brigade Signal Section forms part of the Divisional Signal Company which is organised into four sections.

No. I section is used for the establishment of communication between Divisional headquarters and the headquarters of Infantry Brigades and other units or groups of units. The other three sections are organised for employment with Infantry Brigades for communication between the Brigade commander and units under his command. In India the Brigade Signal Section has three telephone detachments and six visual signalling detachments for communication with the four battalions of the Brigade and, out here, probably with cavalry and artillery as well.

All that a unit can expect is to be connected up by telephone with Brigade headquarters by the Signal Section. At times, however the Battalion itself may have to do this with its own men and equipment. This should not be so if the signal section had sufficient men and equipment, but at present it has not; and battalion signallers, of which there are hardly enough for efficient internal communication in the unit, are taken away from their proper work. If visual communication with Brigade headquarters is required, the unit always has to provide men and equipment at its own headquarters. (Field Service Regulations India 17(2).)

Battalion signallers do not form part of the Army Signal Service, but they should always be ready to co-operate with the Signal Service. They must render each other mutual assistance in establishing intercommunication.

Battalion Commanders must have a fixed headquarters, somewhere where they can always be found; if they have not, messages will follow them about all over the place and great delay will occur. We read in Field Service Regulations India section 8(3) and section 104(5) that the guiding factor in the choice of headquarters is the provision of facilities for the issue and receipt of orders and messages. The position then will depend largely on the method by which orders and messages are received and sent.

In fixing their headquarters Battalion Commanders must therefore take into consideration the necessity of being in a position where they can communicate with Brigade headquarters

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and with the different units of their command. far from any place where visual communication is possible there will be great delay in sending and receiving their messages; as it is quite certain that they will not have telephone communication to all the units concerned. The position of battalion headquarters must be known to Brigade headquarters, to company commanders, and to units on the flanks. change of position must be made known to all. of course, always remain stationary; but when it becomes necessary to move, the new position must be communicated to all concerned, and the old headquarters should not be closed down until the new headquarters has been established; that is to say, until communication has been opened with Brigade headquarters and with the various units from the new Without these precautions there will be loss of position. control. The position of battalion headquarters, when the unit is not in contact with the enemy, might be marked by a large signalling flag, as a guide to orderlies and runners.

Everyone must help the communication service. Signallers are so often looked upon as a nuisance and are given no help at all until it becomes necessary to send an important message, which is often hurriedly and badly written; the signallers are then blamed because the message cannot be got through immediately to its destination. When properly used they are invaluable. In order to get an efficient system of communication, a Signalling Officer, who should not be expected to do anything but communication work, is essential. We must have a body of men trained in the work they would have to carry out in the field; every means of communication in a battalion must be carefully organised, and both signallers and equipment must be economised as much as possible.

The Battalion Signalling Officer is responsible to his Commanding Officer for maintaining communication from the head-quarters of his unit to:

- (1) Brigade headquarters.
- (2) The component parts of his unit.
- (3) Units on either flank of his own unit.

He should remain with battalion headquarters. In order to carry out his duties efficiently he must have the earliest possible information of the plans of his Commanding Officer so that he can make arrangements for communication. All Signal Officers are responsible for making the best possible arrangements even in the absence of orders. It is most important that a reserve of signallers and equipment be kept in hand to meet unexpected demands for communication. One of his most important duties is to see that all the equipment is kept in good working order. On service it should be inspected daily and the telephone cable should be looked to whenever opportunity offers.

It must be remembered that it is not always quickest to send a message by signal. It is a mistake to employ visual methods over short distances. The following points must be considered:

- (1) The length of the message.
- (2) The distance it has to go.
- (3) The necessity for concealment.

It may be quicker to send the message by runner, though at times, even over short distances, signalling may be the safest method. Nowadays Regimental Signallers work at the rate of eight words a minute; this is the actual rate of sending the message and does not take into consideration the time taken by the signaller to read through the message or to have it delivered to the addressee. In considering which is the quickest way for a message to arrive at its destination we have to work out the time taken from when the message is written to the time it is delivered into the addressee's hand.

Ordinarily this would work out at the rate of four or five words a minute if the message was sent by signal, so we can roughly estimate whether it will be quicker to send it by signal or runner when we know the distance it has to go; remembering that a runner's speed, unlike a signaller's does not depend on the length of the message sent.

The great complaint against the use of signallers, which is often heard, is that they are so slow that a message seldom arrives at its destination to be of any use. There are several

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technical ways of speeding up messages which all signallers should know, but all officers can help in this to their own advantage.

- (1) When possible, they should always have their signallers along side them so that they can read a message as it is being written by the signaller, and perhaps be able to make arrangements to act on it before the message is completed.
- (2) Messages must be written legibly so that the signaller can start sending it straight away without having to decipher it or to keep asking what various words are, which means delay. Indian signallers cannot read bad running handwriting. Badly written messages are the commonest source of delay and the easiest to remedy.
- (3) All messages must be as short as possible, in telegraphic form.
- (4) Signallers should not be used as runners or orderlies; this is often done, and when an important message is coming in they are sure to be away somewhere else. Also, properly trained signallers know that they are never allowed to leave their station until it is closed down or they are relieved. Every Battalion, Company and Platoon Commander should have his runners by him for carrying messages.
- (5) A great deal of time will be saved in the sending of a message if each battalion has abbreviated addresses for its head-quarters, companies, and machine gun detachment. These may consist of two or three letters, and must be known to all.

They can be used in the address "to" and the address "from" on the message form. They cannot, of course, be used on messages sent to Brigade headquarters or to units on the flanks as only those detailed in Field Service Regulations India are recognised.

The time of despatch and place from which sent are the most important items in a message; the messages should be numbered, it saves a lot of time in replying to them.

A battalion has ordinarily three methods of inter-communication:

- (1) By visual signalling.
- (2) By runner.
- (3) By telephone.

Other more primitive methods are voice, megaphone, whistle, hand and rifle signals. As units get smaller so the probable distance over which it is necessary to communicate decreases and these become possible.

Whatever method of signalling is used it is absolutely necessary that the system should be uniform throughout the service. Only signals laid down in the manuals should be used, and private means of conveying orders and information, only known to a comparatively few men, should not be tolerated; the reasons for this are obvious and require no explanation.

On the Western front 5 or 6 alternative methods have to be organised and after a heavy bombardment probably runners will be the only remaining means of inter-communication; but, across the border, we will generally have one method only with runners as an alternative, and the latter in hilly country will be a slow means of sending a message. But in thick weather, and in the absence of telephone communication, they will be the only method available.

The signalling equipment issued to units in India is inadequate; many units have had to supplement the authorised scale of equipment with extra helios and lamps bought out of Regimental funds. Small electric lamps would be very useful in Mountain Warfare as they are handy to send up with piquets atnight, and can be read at a considerable distance.

The great disadvantage of all visual signalling is that it is apt to disclose positions to the enemy, and, except when the helio is used, is slow and uncertain. It is useless in close wooded country, and the signals are liable to be read by the enemy. Visual communication in hilly country is easier to obtain than in flat country; while telephone lines will take longer to lay out owing to the broken nature of the ground and difficult

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country. Movements also will take place so rapidly that there will be little time to lay out and reel up cable; and we have not at present sufficient telephones or cable to connect up the numerous small parties into which a battalion will probably be broken. These difficulties can be partially overcome if we have some cheap and light form of wire which is quickly laid out and which it is not necessary to reel up again. At present, therefore, we will generally have to fall back on visual signalling. Its main advantages are that there is small danger of a breakdown and the communication cannot be cut by the enemy or hostile inhabi-Few personnel are required to keep up communication, and transport for carriage of equipment is not necessary. Brigade or column Signalling Officer knows his work well it should be possible to arrange constant communication between moving troops by means of successive central stations. requires good previous organisation and orders, and numerous signallers, who of course are seldom available.

Signallers must always be made to take cover. They are often allowed to get into bad habits on manoeuvres. They should never be allowed to wave their flags in the open but should be taught to send kneeling or sitting down behind any available cover. They are always attracted by the highest point of a hill, and you often see them standing up on the skyline giving the whole show away, when a position further down the hill is just as good for purposes of communication.

In a battalion we have six methods of visual communication; small and large morse flags, semaphore, helio, lamp, and discs; the latter are not an article of issue in Iudia. The distance at which these various instruments can be read depends on the state of the atmosphere, the background, and the power of the telescope or glasses used.

The small flag can be read at about four miles and the large flag at about six miles in a clear atmosphere; but the use of flags will generally depend on whether concealment is necessary or not, and it nearly always is. White flags must be kept covered up when not in use, in a khaki covering or wrapped up in a blue one. Flags are a slow means of communication.

Semaphore is a rapid and simple means of communication and can be usefully employed over short distances, such as across rivers and defiles, or between piquets and supports. It can be read up to about two miles. Semaphore was first used in 1809 during the Napoleonic wars.

Helios are most useful instruments in fine weather; the pattern issued in India to infantry units is very heavy and could be usefully exchanged for the small cavalry pattern. The distance at which they can be read, for regimental purposes, is only limited by the visibility of the points between which communication is required. They can be made very inconspicuous and can be worked from inside a trench without exposing the operator at all. Good signallers should be able to set them up and open communication in two minutes. You often hear it said that helios also give positions away to the enemy, but the lateral range is really very small. If a helio is aligned on a point 6 miles away the light will be visible only about 50 yards on either side of that point.

The oil lamps issued out here make a great noise when used which can be heard from some distance away. They can be located by scouts even when the light is not seen. They can be read at a distance of five to seven miles but have been read at twenty, in an exceptionally clear atmosphere.

Discs are very inconspicuous and can be worked by a man lying down. They can be read at a distance of about 2000 yards with the naked eye, but are a slow means of communication.

The great advantage of the telephone over visual signalling is that, by it, we can communicate with any other place from under cover, and no arrangements have to be made to ensure that the two places, between which we want communication, are visible to each other. The Commander is, therefore, freed from the necessity of fixing his headquarters somewhere near a signal station, which may not be a convenient place from any other point of view. He must insist that the telephone terminal is

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brought right close up to his headquarters, so as to save delay in walking backwards and forwards when he is wanted to speak at it. When telephones are kept in proper working order, they are by far the quickest means of communication. Orders and information can be sent and received with a minimum of delay direct between the individuals concerned. Signallers, however, should invariably transmit messages by the buzzer; for them it is quicker than speaking them out word by word. This is particularly important in a mixed Brigade, where there may be signallers speaking different languages at each end of the line. This language difficulty was particularly serious during the operations in East Africa, where in nearly every column, four totally different languages were spoken.

The use of telephones is governed by the necessity for reeling up the cable before it can be used again, and by the fact that a flank movement of headquarters will, in most cases, disorganise the telephone system. Cables, therefore, should not be laid until the situation is sufficiently developed for it to be reasonably certain that headquarters will remain in one spot for a considerable time. But when telephone lines have been laid messages should be sent by them in preference to any other method. Recling up cable takes a long time with our present equipment.

Telephone lines will be found most useful between bivonac and piquets; between detached forces they will seldom be left intact. When possible, they should always be supplemented by visual communication. A battalion has six telephones and six miles of cable; it can, therefore, usually only lay out three telephone lines; but, by the use of a small field exchange, it can have telephone communication with as many as five different places. This is a very simple instrument and greatly increases the working value of the battalion telephones. Its use enables us to economise telephones and so increase the number of lines, in cases where the messages traffic is not great; and it also allows us to join two lines independently as in an ordinary telephone exchange. It would be particularly useful in connection with telephone lines to piquets round camp, as lamp signalling will, of

course, disclose the position of the piquets and camp to the enemy, if he does not know them already. If there is any doubt as to the use of lamps at night, the wishes of the commander of the force must be found out. Unless, therefore, we have the piquets connected up to camp by telephone it will be difficult for them to communicate at regular intervals throughout the night to report that all is correct or otherwise. Lamps will be most usefully employed to supplement telephone lines in case the cable is cut, when concealment of the piquet will probably be no longer necessary.

All non-commissioned officers should be taught how to use the Field telephone for speaking. It sounds simple; but at first they will probably not be able to make themselves understood. They will at first have to be told which is the correct thing to speak into; then, in field telephones there is a switch you have to press while speaking, this is sure to be forgotten. Finally they will have to be told to speak quietly and precisely; if they cannot be understood they must speak slower but never louder, which will seem to them the natural thing to do.

We are told in Field Service Regulations India section 24 (5) that a system of rapid communication will be established throughout every column on the march. This is usually difficult to arrange. Signallers can take and send short "verbal" messages by flag while on the move, without writing them down. If they have to halt to take down a long written message, it will take some time to arrive at its destination. It will be quicker generally to maintain communication between advanced and rear guards, and the main body, by mounted orderly or runner; or to pass messages along a line of connecting files. It is possible to arrange moving telephone communication from front to rear by having the wires held by files at a few paces interval. This method is particularly useful at night but it would probably be difficult to arrange on a winding track in the hills.

The main object to be kept in view in the training of signallers is to bring them to the highest state of efficiency in all the duties required of them in the field. Too much time is often

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spent in technical work on the parade ground. They get no practise at working from under cover and at distances they would have to work at in the field. They are generally given clearly printed messages to send and when they get messages hastily and often badly, written in the field, they find difficulty in deciphering them. They should always practise with running hand messages, written in different handwritings if possible.

Directly men have learned to lead and send on all the instruments and have a knowledge of how to deal with messages the rest of their training should take place in the field under practical conditions; and every opportunity should be taken of working them with troops.

As telephones are now the most important means of communication it is absolutely necessary that signallers should be experts in their use. If communication breaks down they should know immediately what has gone wrong and be able to put it right in a very few minutes. If the men are real experts in their use and look after their telephones properly, the only way communication can break down is by a break in the cable. The danger of this can be reduced to a minimum if trouble is taken to lay the cable properly on the ground. It is very important that every man in the unit should know what to do when he sees a broken cable. As the use of telephones greatly depends on the speed with which the lines are laid and reeled up again, the men must be very quick at this work. They should be able to lay out cable at 4 miles an hour and reel it up at 2 miles an hour; but they could not keep up these rates in hilly country.

It would be a very good thing and would create a certain "esprit de corps", which is so important, if signallers always live together in barracks as well as in camp, as the machine gun section did. This will also make their parades independent of the Regimental meal hours.

From the first they must be made to understand the importance of their work and what a lot may depend on them. They must remember that the sole object of their existence is

to keep their commander in touch with the various parts of his unit; and that a message handed into them must be got to its destination somehow.

It is of the greatest importance that signallers should always be on the look-out all round and ready to take and send messages. There was a good example of the importance of this in East Africa in June 1915, at a place called Bukoba. This town was a German base on the shores of Lake Victoria Nyanza, and a force was landed there to take and destroy it covered by the guns of the ships. It was arranged beforehand that if the guns shelled our own troops, "STOP" would be signalled to them. On the morning of the second day of the attack the guns began shelling one of the battalions which was advancing across the open towards the town. "STOP" was immediately helio-ed, and, happily, there was a signaller on the look-out, and the guns stopped firing before any damage was done.

In trans-border warfare a battalion will so often be broken up into small detachments, all of which will have to be in communication with their local headquarters, that signallers will often have to be employed singly. It is important therefore that they should be trained to send and receive messages by themselves, both by flag and helio.

For this form of warfare it is also most useful to practise them in sending and reading short verbal messages while on the move; the correct form of message must of course be observed.

However the signallers of a battalion are organised into visual and telephone detachments, all men must be thoroughly trained in both visual and telephone work, so as to be interchangeable for different situations. For instance, if a battalion were detailed as piqueting troops to a force advancing through a defile, it would be necessary to use all telephone men for visual work with piquets and supports. In this case the Signalling officer will have to arrange communication with all the piquets supplied by the battalion. Every available signaller will be necessary for this. There will not be enough men, nor will

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it be worth while, to run out telephone lines to road piquets. If possible two signallers with a helio should be sent up with each piquet: but we will not have sufficient helios for this and they will have to be kept for the more important piquets and for those which have a wider range of view. It will often be possible to send only one signaller with a piquet. Signallers with road piquets should take up a position below the crest of the hill where they can see the road or the support.

They should try to get into communication with neighbouring piquets. Signallers will also have to be told off to supports; the company commander will have his own signallers with him. Piquets round camp should be connected up by telephone, supplemented by lamp communication. This has already been dealt with. Two signallers must be sent up with piquets at night.

It is sometimes useful to establish a central station, when communication has to be kept up in several different direc-Messages will be sent to the central station which will transmit them on to their right destination. It must be in a position where a good view is obtainable. An escort will probably be required for it. For instance, during the march, if a position can be found from which the route is visible, communication throughout the column will be greatly facilitated by establishing a central station there. In the case of a column moving out from camp to destroy a village, it may be possible to establish a signal post through which the column can keep up communication with camp. In an attack lateral communication is often impossible, but it may be easy to signa! back to some fixed point; though, in an attack, telephone communication should be arranged whenever possible. The position of a central station should be mentioned in orders and should be known to all concerned. It should not be moved until there is no further use for it. Messages, of course, should only be transmitted through the central station when direct communication is impossible.

BIOGRAPHICAL SKETCHES (Continued.)

RV

COLONEL R. G. BURTON, INDIAN ARMY.

III. Lord Lake.

General Lake, a fine soldier who came to India as Commander-in-Chief in 1801, was of a type far different from that of Clive and Wellesley. The two great warriors whose careers in India have been previously reviewed were both young men, and rose to eminence in youth. Clive was only 26 at the siege of Arcot, and at 32 laid the foundations of an Empire at the battle of Plassey. Wellington commanded an army in the field at 33. Lake, when he came to India, was already nearly 57 years of age and had seen a great deal of service on the Continent, in America, in Ireland during Humbert's invasion, and in the Irish rebellion, when he commanded at the battle of Vinegar Hill and suppressed the insurgents.

When the Mahratta war of 1803 broke out, he took command of an army in Hindustan to operate against Sindhia, who held the Mugal Emperor in his power at Delhi. Sindhia's chief strength lay in his regular army, 40,000 strong, which, organised and trained under French officers, was now commanded by the French adventurer Perrou, who had been allotted the Doab between the Ganges and the Jumna for the maintenance of his troops. In dealing with Wellesley's campaign in the Deccan, it has been related how a considerable portion of Sindhia's regular infantry was destroyed at the battle of Assaye. But the campaign in Hindustan synchronised with that in the Deccan; and part of the regular infantry remained in the north opposed to Lake, while several battalions escaped intact from Assaye.

This regular infantry was composed, not of Mahrattas, but of Jats, Musalmans, Rajputs, and other fighting races. They were equipped, organised and trained in European style, and had attained a high standard of efficiency. Among their officers were not only those of the gallant and adventurous nation to

which their leader belonged, but many English soldiers of fortune, all of whom resigned their posts in preference to fighting against their country, while some took service in Lake's army.

In August 1803, at the time when, it will be remembered, Wellesley opened his campaign in the Deccan with the capture of Ahmednagar, General Lake's army was concentrated at Cawnpore. The Mahratta army of Perron was based on the strongly-fortified cities of Delhi, Agra and Aligarh, the latter being a great arsenal. Perron had in all some thirty five battalions of regular infantry. In addition there were hordes of Mahratta Horse as well as large numbers of irregular troops and a numerous artillery. To oppose these Lake could muster no more than 10,000 men of all arms, but they were well-disciplined and comprised a large proportion of English cavalry, although they included only one English infantry regiment, the 76th Foot, and they had the benefit of a thorough course of training during the cold weather of 1802-3. Lake's base was at Allahabad. During the period of training he had become thoroughly acquainted with his army, and had gained their confidence. At manoeuvres although in his 59th year, the general himself headed every cavalry charge as he subsequently did in war. The plan of campaign had the occupation of Delhi as its ultimate object, but the first undertaking was to be the defeat of Perron's army and the capture of Aligarh. The army marched from Cawnpore on the 7th August 1803, and arrived before Aligarh three weeks later. Perron had drawn up his force, consisting principally of cavalry, in a strong position, their right testing on the great fortress and their front covered by a deep morass.

Lake at once made a flank movement to attack the enemy's left, and led the charge at the head of his cavalry, formed in two lines, the infantry being in support. The Mahratta horse gave way at once and fled from the field, Perron's body-guard alone retaining its formation and escorting the French leader in his flight to Agra. The garrison of Aligarh consisted of some 5,000 infantry in addition to artillery and a regiment of cavalry under command of Colonel Pedron, Perron's son-in-law. Pedron

had been enjoined to "defend the fort while one stone remains upon anotherremember your nation. The eyes of millions are upon you." But he was inclined to come to terms and entered into negotiations with the English commander. The Mahratta leader in the fort, Baji Rao, was however of different mind; he placed Pedron under arrest, broke off the negotiations, and determined to hold out.

On the morning of the 4th September Colonel Monson led a force to the assault, headed by four companies of the 76th Regiment. When the assailants arrived within a hundred yards of the gate, they found a traverse mounted with three six-pounders, from which the enemy were dislodged before they had time to fire. The first attempt at the gate failed, these massive barriers having been closed by the enemy, and an attempt by the Grenadiers of the 76th to scale the walls was at the same time repulsed. The enemy even climbed down the scaling ladders and attacked the stormers. Colonel Monson was wounded, four Grenadier officers and the adjutant of the 76th were killed. and the assault was for a time checked. But at length the three gates were blown in in succession by a 12- pounder, the storming party passed through, and in an hour's time the place was in the hands of the English. The enemy lost not less than two thousand killed, and the surrounding ditch was choked with dead bodies; numbers who attempted to escape by swimming were drowned, and those who effected a crossing were cut up by the cavalry. The English casualties numbered 170, including 6 English officers killed and 11 wounded. Two hundred and eighty-one guns and a large quantity of stores and treasure were taken.

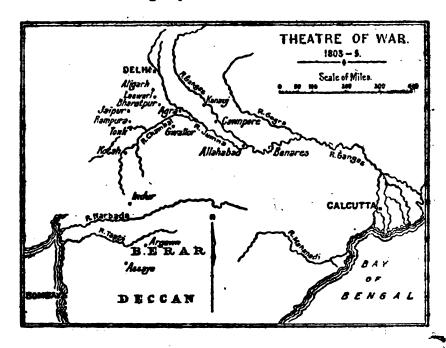
General Lake now marched against Delhi, the historic capital which had been taken by many conquerors, but had not yet been by European troops. It had been sacked by many invaders from the north-west; by Taimur the Taitar; by Babar the founder of the Mugal Empire which attained its zenith under his grandson Akbar, but was now tottering to its fall; by Nadir Shah the Persian invader, whose massacres

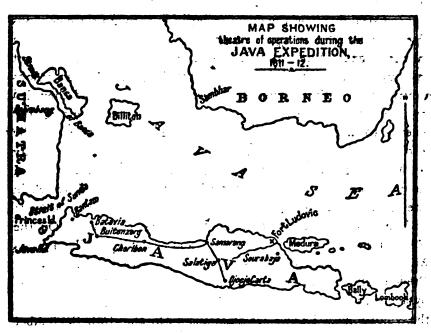
gave its name to the Gate of Blood; and by the Mahrattas whose hordes were afterwards defeated at Karnal by the combined armies of the Mugal Emperor Muhammad and the Afghan invader Ahmad Khan. But it had not hitherto succumbed to the English, the white race from across the seas, whose coming had been foretold by the Sikh Guru of old when he stood in his prison in the Imperial city, gazing with prophetic vision towards the west.

Delhi was now dominated by the Mahrattas who held in durance the blind Emperor Shah Alam.

On the 11th September, after an 18-mile march, the army pitched their tents within six miles of the capital, which lay beyond the river Jumna. No sooner, however, had the troops settled into camp than their outposts were attacked by the Mahratta Horse, and Lake at once rode out to the front at the head of three regiments of cavalry, which were all he had with the army, the remainder having been detached to protect English territory from the enemy's incursions. It may seen strange that the proximity of the hostile forces under the walls of Delhi was unknown to the English commander. One finds such sudden collisions frequently taking place in those days, and it appears that the reconnoitring duties of cavalry were not then understood. It was the same at Assaye and Argaum. Cavalry frequently marched behind the infantry, and was then more of a fighting than a reconnoitring arm. In the wars with the Mahrattas an additional reason for the difficulty of reconnoitring is to be found in the vast numerical superiority and mobility of the enemy horse.

Lake, then, moved out at the head of his cavalry to make a personal reconnaissance and, driving in the Mahratta horse, found, at a distance of two miles, their army 20,000 strong, drawn up in order of battle under command of a French adventurer, Louis Bourquin. The Mahrattas, in accordance with their custom, had taken up a strong position on rising ground, the infantry in an intrenched line with the artillery in front and either flank resting on a marsh in rear of which their cavalry was





posted. He who holds Delhi holds India, an aphorism especially true in those days when the Mugal still held nominal authority throughout the Peninsula.

To oppose this great army Lake had only some 4500 men including the 27th Dragoons, two regiments of native cavalry, the 76th Foot, and seven battalions of native infantry. He at once engaged the enemy with his cavalry and sent back orders for the infantry and guns to come up as soon as possible. ing the interval the cavalry suffered heavily from artillery fire, and Lake had a horse killed under him. On the arrival of the infantry at a convenient distance, the English general retired his cavalry in a regular line in order to draw the enemy from his The Mahrattas, thinking this a retreat, left their trenches and advanced with loud shouts, exulting in prospective victory, but their hilarity was checked when the cavalry, opening out to either flank, unmasked the line of infantry in rear. Lake disposed his infantry in one line, with no reserves, the apparent rashness of which measure was justified by the event. Leading in person at the head of the 76th Regiment, he advanced straight upon the enemy's position through a tremendous fire of round, grape and chain shot, which, discharged from a hundred guns, tore through the English ranks. But without moving their muskets from their shoulders, the English troops advanced to within a hundred yards of the enemy, and then, led by their commander, charged with the bayonet, putting the enemy to flight in all directions. The infantry then rapidly broke up into columns of companies, thus allowing the cavalry with their galloper guns to charge through the intervals and take up the pursuit. Numbers of the enemy were drowned in the Jumna; their loss was estimated at not less than 3000 men; and the whole of their guns and stores were captured. On the English side there were 426 killed and wounded. The French officers surrendered after this battle, which struck a final blow at French influence in Northern India. The conflict was watched by a crowd from the towers of Delhi, which afterwards greeted the victors with joyous acclamations. On the 16th September

General Lake was conducted to the presence of the blind and aged Mugal Emperor who, stripped of all authority by his late oppressors, was seated under a small tattered canopy and, in the language of oriental hyperbole, was said to have recovered his long-lost sight on this joyful occasion.

On the fall of Delhi and surrender of the French officers, many of the enemy troops entered the English service, among others eight squadrons of horse. These being asked who should command them in their new service, shouted with one voice, "Sikandar Sahib!" asking for Skinner, an officer of mixed blood, the son of an English officer and a Raiput lady. He had been for many years in the service of Sindhia, which he left on the outbreak of war, stipulating only that he should not be called on to fight against his old master. Skinner was one of the finest officers who ever drew sword; he had seen much fighting and had been several times wounded. He was now appointed to command the corps since known by his name, at first consisting of three squadrons, whose distinctive yellow uniform he chose, and with which he served many years. When he died, nearly the whole population of Delhi, European and native, turned out to attend his funeral.

The army marched from Delhi on the 24th September, the day after Wellesley had won the battle of Assaye, moving against Agra, "the Key of Hindustan," along the west bank of the Jamna, while the guns for the siege were conveyed down the river in boats. On the 4th October the army encamped before Agra on the site of the present cantonment, but it was not until after siege operations, characterised by heavy fighting, that the place surrendered and the garrison laid down their arms on the 17th October. Lake made some interesting observations regarding the operations at this period. He wrote—"The sepoys have behaved excessively well, but from my observations this day, as well as on every other, it is impossible to do great things in a gallant and quick style without Europeans; therefore if they do not in England think it necessary to send British troops in the proportion of one to three sepoy regiments, which is, in fact, as

one to six, (the native regiments having each two battalions) they will stand a good chance of losing their possessions if a French force once get a footing in India. You may perceive how by the loss of European officers in sepoy regiments how necessary it is for them to expose themselves—in short, everything has been done by the example and exertion of the officers." We certainly cannot afford to neglect the lessons of history!

While these operations were in progress, a force of fifteen battalions of regular infantry, subsequently reinforced by two other battalions, had been detached by Sindhia from his army in the Deccan, and, together with 72 guns and some 5000 horse, were attempting to retire into Mewat, a hilly region to the south of Delhi. Lake determined to deal with them before they reached that favourable ground.

On the night of October 31st, he made a march of 24 miles with three brigades of cavalry, leaving the infantry to follow, and at daybreak came up with the enemy who had taken up a position, selected with their usual tactical skill, near the village of Laswari. Although he had marched twenty-five miles, the General decided to attack at once, but his advance was delayed by an inundation which the Mahrattas had made by cutting the embankment of a tank near the road.

This delay enabled the enemy to take up a position with their right in front of the village of Laswari, resting upon a rivulet with steep banks, and their left on the hamlet of Mohalpur, while their front, concealed by high grass, was covered by a line of seventy-two guus. They had nine thousand infantry and five thousand cavalry.

The English general, seeing that the enemy were still attempting to effect a retreat, at once engaged them with his cavalry. The first Brigade, under Colonel T. P. Vandeleur, charged their line, penetrated the village of Mohalpur and captured several guns, but suffered the loss of their leader, who was shot through the heart. The 3rd Brigade, under Colonel Macan, who had two of his brothers on his staff, followed this example,

and charged the enemy's left, piercing their line, and again charging backwards and forwards twice, capturing all the guns on that flank, which, however, they had not the means to carry off. The enemy were so strong and their fire was so heavy that Lake now drew off his cavalry to await the arrival of the infantry.

The infantry arrived before noon, and arrangements were at once made to renew the attack. The Mahrattas had taken advantage of the pause in the action to change and strengthen their position. Their commander, Abaji, now drew up his infantry in two lines, facing east, with his right some 300 yards from, and and at right angles to the rivulet, and his left near the village of Mohalpur. His cavalry was posted in rear of his right.

Lake now formed his infantry in two columns, one of which was to take the village of Mohalpur while the other threatened the front and left of the enemy's line. The assaulting columns marched along the bank of the rivulet for some distance under cover of the grass until they came under fire of guns, which poured showers of shot and grape into their ranks, and for a time checked their advance. The Mahratta horse, which had rallied; also menaced the advancing line, but were dispersed by a charge of the 22nd Dragoons, which penetrated both lines of the hostile nfantry. Led by the general, the British infantry pressed forward with irresistible valour. Lake's horse was shot under him, and his son was severely wounded when in the act of offering his charger. The enemy fought stubbornly, but no effort on their part could stem the tide of battle. Shot, bayonetted, and cut to pieces by the cavalry, the whole of their seventeen battalions were destroyed, 7000 being killed and 2000 taken prisoners. Seventytwo guns, five thousand stand of arms, forty-four colours and sixty-four tumbrils laden with ammunition were taken, as well as three filled with treasure and all their bazaars and camp equipage. The victors also suffered severely. Fifteen officers were killed. including Major-General Ware, whose head was taken off by a round shot, and twenty-six were wounded. 160 men were killed and 630 wounded.

The power of Sindhia was now completely broken, in Hindus-Wellesley had defeated the combined forces of Sindhia and the Raja of Berar at Assave on the 23rd September, and a month after the battle of Laswari he completed his conquest of their forces at Argaum. On the 17th December a treaty of peace was concluded with these two princes. In the biographical sketch of Arthur Wellesley it has been related that Holkar of Indore, the remaining great Mahratta Chief, stood aloof from hostilities during the campaign of 1803. His attitude was in the main due to his jealousy of Sindhia, whom he was unwilling to assist to become the ruling power in India. But now that his rival was crushed he determined to take up arms against the English, and hostilities began in April 1804. At this time Lake, who was in camp north-east of Tonk, received orders to attack Holkar who had advanced into Rajputana and was threatening Jaipur, which the English were pledged to protect. Lake despatched against the Mahratta Chief a force under Colonel Monson who met with disaster on the Chambal river, principally owing to his not carrying out the great principle, never to retire before an Indian army. His retreat is described in a famous letter which may be read in the Wellington Despatches, and in itself constitutes an education in oriental warfare.

There is not space here to describe the varying fortunes of Lake's campaign against Holkar, his successful attack on Dig and his failure at the great stronghold of Bharatpur, so manfully defended by the Jats. Nor is it necessary. Enough of his career has been related to bring into relief his great characteristics—his calmness in danger, his self-reliance, and in consequence of these his power of inspiring confidence in his troops. He was no great strategist, but a fine leader of men. He was never so great as on the battlefield. He could think more clearly amid the shock of battle than in the quiet of his tent. In this respect he resembled Clive, and, like Clive, he dared where others might have shrunk from action. Lake was most careful of his dress and appearance, in which respect he may well be imitated. He was something of a dandy. He dressed as carefully for battle as for a ball. One can

in imagination see this brave old soldier, with his carefully powdered wig, his cocked hat and his face as red as his coat, marching at the head of his troops, leading his infantry, sword in hand, or heading his cavalry in the charge amid the smoke of battle.

IV. Robert Rollo Gillespie.

The wars of the early years of the Nineteenth Century brought into prominence many fine soldiers in India, where for nearly a quarter of a century English swords were seldom Many of their names have been overtaken by unmerited oblivion, or are known only to students of history who have studied the details of the minor campaigns and military episodes of those times. The subject of this sketch; was a brave soldier of whose romantic career but little appears to be generally known in our time. Yet there has been in our service no soldier more gallant, more euergetic, more en-. terprising than Robert Rollo Gillespie, one of the finest cavalry officers who ever drew sword. Another reason for the selection of the subject of this memoir is that he was in his career connected with, and indeed was the chief actor, in two especially remarkable episodes—one, the suppression of a military mutiny which might have spread over the whole of India had it been dealt with in the same feeble manner as the outbreak at Meerut in 1857; the other an overseas expedition undertaken for the conquest of Java. These episodes are both instructive, especially that of the suppression of the mutiny at Vellore, which teaches lessons that would have been of value had they been remembered in the great revolt fifty years later. Military history, rightly interpreted, is the true school of war, and, as Lord Esher said in an address delivered at Aldershot some ten years ago-"British officers, of every rank and of all ages, may be suddenly called upon to take responsibilities, upon which many of them have never pondered, and to decide issues big with the fate of their countrymen and countrywomen, which, perhaps, a few months of careful historical study in time of peace would. enable them to solve with conspicuous success."

Gillespie was born at Comber, County Down in 1760, and was gazetted an ensign in the 45th Foot when only ten years of age. We take our officers now from the school at an early age, not from the nursery; but in those days there was nothing unusual in this early appointment, and juvenile appointments even to field rank were not unknown; there is a story of a visitor to the house of an acquaintance enquiring what the child was crying about upstairs, and being told that it was "only the Major greetin" for his parritch".

Gillespie joined the Irish Horse (now the Carbineers) as a cornet in 1783. Four years later he fought a duel at Kildare and killed his opponent, each combatant holding one end of a handkerchief and firing on a given signal. In 1792 he was promoted to a lieutenancy in the 20th Light Dragoons, raised for service in Jamaica. Soon afterwards, in an attack on Portau-Prince in the island of San Domingo, he distinguished himsel, by swimming ashore with a flag of truce, with his sword in his mouth, under fire from the shore. Whatever may be said of permitting officers to belong to the secret society of freemasons, to which objection has sometimes been taken for obvious reasons, the fact of Gillespie being a freemason on this occasion saved a valuable life, for it saved him from being shot on landing. It is remarkable that he escaped the sharks which infest the harbour of Port-au-Prince. During his residence in San Domingo his house was entered one night by eight desperadoes, who murdered his servant. noise Gillespie fell upon the assassins with his sword, killed six of them and was dangerously wounded by the other two, who then made their escape. He was a little man for all his great courage. The fame of this exploit preceded him and when he appeared at the King's levee on his return home, George III said when he was presented to him-" Is this the little man who killed all the robbers?"

Gillespie exchanged later into the 19th Light Dragoons, then stationed at Arcot, the place rendered famous by Clive's defence in 1751, and travelled to India through Germany,

Austria, Serbia, Constantinople, Aleppo, and Baghdad, a hazardous journey in those days. At Constantinople he fought a duel with a French officer who picked a quarrel with him. It is fortunate that an officer so brave and determined was at hand when in 1806 a mutiny broke out among the native troops at Vellore.

The fort of Vellore is of great strength, of irregular shape with massive granite walls, the upper parapets lined with brick work, with embrasures at intervals. There were round towers at intervals along: the main rampart. It was surrounded by a ditch, at one time full of water infested by crocodiles. There was a garrison order prohibiting the destruction of these reptiles. but the subalterns used to catch them surreptitionsly on an arrangement of hooks baited with a goose, or shoot them when they came to the surface, a parish dog, soundly beaten on the bank, serving as a dinnerbell to the hungry monsters. It was said that the Brigadier commanding the fort had been seen looking on from the concealment of an embrasure, enjoying the sport that was being carried on contrary to his orders. is also related that when the evening gun was fired nightly the crocodiles all sank to the bottom of the ditch, owing to the noise or concussion, and soldiers wishing to break out of barracks used to take the opportunity to swim across, returning in the morning when the gun fired at reveille gave the signal for the reptiles to sink again to the bottom of the ditch.

After the capture of Seringapatam in 1799 and the death of Tipu Sultan, the sons of that potentate were interned at Vellore, where they were provided with an establishment more in accordance with their former state than their present condition. Their quarters in the fort resembled a palace, and large numbers of their adherents were allowed to follow them. A nucleus of disaffection was thus formed. An additional cause of trouble arose from the ill-advised action of the authorities in introducing a new fashion of turban to which the sepoys objected owing to its resemblance to the headdress worn by the East Indian drummers, and a rumour was spread that this was: preparatory to forcible

conversion to Christianity. Another order to which objection was taken directed that "a native soldier shall not mark his face to denote his caste, or wear earrings when dressed in his uniform; at all parades and on all duties every soldier shall be clean shaved on the chin."

The Madras military authorities, in spite of warnings by experienced officers, persisted in enforcing the objectionable orders, and a regiment in which discontent had appeared at Vellore was removed in disgrace and replaced by another. In view of the circumstances it was not surprising that discontent eventually broke out into open mutiny.

In July 1806 the garrison of Vellore consisted of the four companies of the 69th Foot, six companies of the 1st Battalion 1st Madras Infantry, and the 2nd Battalion 23rd Madras Infantry, the whole under command of Colonel Fancourt. At Arcot, 16 miles distant, were stationed the 19th Light Dragoons and the 7th Madras Cavalry, known as "the Black Nineteenth" from their close association with the 19th at Assaye and on other fields of battle; these were under command of Colonel Gillespie. Nearly a month before the outbreak, the commanding officer of the 1st Madras Infantry was warned of the approaching trouble by a sepoy of his regiment, but instead of making cautious enquiries, he sent for his native officers, who persuaded him to place the sepoy in confinement as being insane. A European woman also went to Colonel Fancourt to give warning of what she had heard regarding the impending mutiny, but was not listened to.

The 69th were quartered in the fort of Vellore; the sepoys mostly lived in the native town outside providing guards inside the fort, where also their arms were kept. Some of the guards were of mixed native and English soldiers. On the night of the 9th July, the 1st Madras Infantry furnished the native portion of the guards, and the 23rd had permission to pass the night in the fort so as to be near their arms and ready for a field day which had been ordered for next morning. At about half past two in the morning of the 10th the native troops made a simul-

taneous attack on the English on guard and in barracks. On the main guard all except four of the English were killed, and at the same time fire was opened on the officers' quarters to prevent them from joining their men.

Meanwhile some officers and a sergeant, alarmed at the firing, met at the house of Lieutenant Ewing, 1st Madras Infantry, who had secured the arms and ammunition of four men on guard at his house; after repulsing an attack they proceeded to an adjoining house which offered better facilities for defence. From here Sergeant Brady was sent out to reconnoitre, and returned in an hour with information that the Commandant and all the English on guard had been killed, while the Mysore flag had been hoisted and the barracks were being attacked by musketry and the fire of two 6-pounders. At 8 o'clock in the morning sepoys broke in at the back of the house, but the defenders retreated by the front and gained the barracks. they found many killed and wounded by the fire of the guns, while the men had scarcely any cartridges left, having been served out with only six rounds per musket; but a sally was made by some 200 survivors out of the 372 men of the detachment of the 69th. It was found that the small magazine at the bottom of the ramparts had been emptied of ball castridges by the insurgents.

The party now climbed the ramparts under a heavy fire, and after suffering some loss, dislodged the insurgents from the north-east cavalier. Leaving some men at this point, they advanced along the ramparts and gained possession of the gateway, losing many men, especially from fire from the palace. Opposite the gateway they found a 6-pounder but had no ammunition for it. The main body of the detachment, under Captain Barrow, now proceeded to drive the sepoys from the south-east bastion and cavalier, losing their leader, who was shot through the leg on the way. They obtained possession of the grand magazine at that point but found in it nothing but loose powder. During this operation a heavy fire was kept up by the insurgents, and many men fell. The only unwounded officers

remaining were Surgeons Jones and Dean, who gallantly led the survivors. The party then returned to the gateway, pulling down the Mysore flag from the flagstaff on the way, having left a detachment for the defence of the south-east bastion and cavalier.

Colonel Gillespie had at daybreak that morning ridden out on the way to Vellore, where he had an engagement to breakfast with Colonel Faucourt. He had not gone far when he was met by an officer, despatched by Major Coates, who resided outside the fort, with news of the outbreak, and in a short time he was galloping along the road to Vellore with a squadron of the 19th Light Dragoons and a strong troop of the 7th Madras Cavalry, leaving orders for the galloper guns and the remainder of the 19th to follow. The 69th had been in Jamaica four years before, and when the relieving party approached with Gillespie at their head, Sergeant Brady, who was with the survivors over the gateway, exclaimed-" If Colonel Gillespie be alive, God Almighty has sent him from the West Indies to save our lives in the East!" The moment was critical, for they had expended their last cartridge, and the sepoys were gathering to destroy them, but, seeing the appproach of the troopers, the greater number retired to the farther ramparts. Gillespie found the drawbridge over the moat/down, and two of the four gates into the fort open, the third gate was opened by men of the 69th, let down by their belts from the cavalier above, but they were unable to force the innermost gate. Gillespie, however, broke open the wicket, which was of a size to admit one man at a time, and, entering the fort, tried to force the gate from the inside, but was unable to do so as it was strongly locked and barred.' All this time he was under a heavy fire from the mutineers. It was necessary to await the arrival of the guns, but in order to encourage the defenders over the gate, Gillespie had himself drawn up by a rope which he found underneath, while the bullets spattered round him against the wall and, seizing the regimental colours, he headed a bayonet charge against a battery, turned the guns on the mutineers, and kept them in check for a time, although there was no ammunition.

At this moment when it seemed as though the fate of the party could be no longer averted, the remainder of the 19th and the galloper guns appeared at the gate, which was defended by two guns, while the sepoys had assembled to dispute the entrance. Placing himself at the head of the survivors of the 69th, Gillespie charged the mutineers to clear the way for the cavalry, the gate was blown in by a shot from one of the guns, the troopers charged into the fort, and the insurgents were cut to pieces to the number of 350; those who escaped through the sally-port were killed outside. By 10 o'clock all was over. The 69th lost 115 killed and wounded; the 19th had one trooper killed and three wounded, and Colonel Gillespie was ridden down and badly bruised in the melee.

There are many lessons to be derived from the episode of the mutiny at Vellore. Among these were, in the words of the Court of Directors of the East India Company, "the injudicious regulations enforced under the authority of the Commander-in-Chief, the remarkable degree in which he was unacquainted with the state of his own army just at the eve of an insurrection, when he thought all was calm." The neglect of warning by officers on the spot has already been referred to. The bright spots on this dark page of history are to be found in the gallantry and resource of the survivors of the 69th, and especially of the party under Sergeant Brady which held the gate of the fort. Had the mutineers obtained possession of the gateway, and raised the drawbridge it would have been impossible to recover the fort by a coup-de-main. But the greatest lesson of all is furnished by the decision, energy, resource and personal valour of Colonel Gillespie, whose ruthless suppression of the revolt struck terror into the hearts of other would-be mutineers throughout Southern India, where the insurrection might otherwise have assumed the most formidable proportions. "By the irony of fate on the 10th May 1857, the first shots of the great Sepoy Mutiny were fired within a mile of the monument over Gillespie's grave, and were the beginning of events that at one time threatened to involve British power in the East in ruin and that have changed

the whole course of Indian history. If that gallant spirit was still permitted to take interest in the events of that day, how it must have chafed at the exhibition of incapacity and indecision that led to such disastrous consequences. In view of what happened at Vellore, it is allowable to believe that the great Mutiny of 1857 would never have assumed the proportions it did, had the first outbreak been met by the same display of energy and resolution as was shown, under similar circumstances, fifty-one years earlier."*

In a great Empire such as ours it is as well to remember that the volcanic ashes of insurrection may slumber but are not extinct.

For some years Gillespie had no further opportunity of distinction. In an old book one reads of him spearing tigers let loose from cages on the race course at Bangalore. Southern India had been pacified, but some overseas expeditions were undertaken, and in the campaign for the conquest of Java in 1811, Gillespie was appointed to command the leading division. The division set sail from the Madras Roads on the 18th April; a landing was effected at Chillingching, ten miles east of Batavia, on the 4th August, and the capital was occupied without opposition four days later. The advanced division moved forward to the deserted cantonment of Weltevreden on the 10th and the same day the enemy's advanced posts were driven in on their intrenched camp of Cornelis, being pursued up to the batteries of the place by a squadron of the 22nd Dragoons headed by Colonel Gillespie.

General Janssens, the commander of the hostile army, had concentrated his whole forces in the strongly intrenched camp of Cornelis, defended by 280 guns, between the river Jacatra and the Slokan canal, both of which were unfordable. The position was shut in by a deep trench strongly palisaded; seven redoubts and many batteries occupied the most commanding ground within the lines; the fort of Cornelis was in the centre. After an artillery duel which continued for a week, and a sortie by the

^{*} The Nineteenth and their times. By Colonel John Biddulph.

enemy, it was seen that a frontal attack could not succeed, and it was determined to surprise the right, and enter the position by a narrow bridge over the Slokan.

Before daybreak on the 26th August Colonel Gillespie led a column; supported by a second body under Colonel Gibbs, along a path through the jungle beyond the Slokan. distance to be traversed was some 2000 yards. Shortly before sunrise the head of the column arrived at the point of passage opposite the enemy's works, when it was discovered that the supporting troops were not in touch. Dawn was at hand and the success of the enterprise depended upon immediate action. Colonel Gillespie decided to attack at once with his handful of men. An enemy redoubt on the west bank of the Slokan was taken by a coup-de-main, the passage across the canal being thus secured. The column then pressed on across the bridge with the bayonet, and captured a heavily-armed redoubt on the other side. At this moment Colonel Gibbs arrived with the grenadiers of the 14th, 59th and 69th Regiments, and, wheeling to the right, captured another redoubt, where the enemy fired a powder magazine. All the hostile batteries were now captured in succession, and the enemy's park and reserve were taken by a charge of the 59th. A last rally was made at the fort, but nothing could withstand the onslaught of English bayonets, and the enemy broke and fled in every direction. The 22nd Dragoons came up, and Gillespie, who had been in the thickest of the fight mounted a horse which he cut from one of the enemy's guns, headed a charge which dispersed the remainder of the defenders, and pursued the flying enemy a distance of fifteen miles, half way to the strong post of Buitenzorg. In the pursuit Gillespie captured two generals and killed a colonel in single combat; over 6000 prisoners were taken, including 260 officers, and some thousands were killed and wounded.

This action was followed by the surrender of Java and its dependencies. The brave soldier to whose ability, energy, and gallantry the successful issue of the expedition to Java was mainly due had still some work to do in the settlement of the island

and its dependencies. When the main army returned to India he was left in charge of the garrison. At Palimbang in Sumatra the Sultan had raised the standard of rebellion and massacred the Dutch inhabitants. On receipt of this news at Batavia, in March 1812, Colonel Gillespie started for Sumatra with a force including some companies of the 59th and 89th Regiments, and, accompanied only by a few officers and 17 grenadiers of the 59th, travelled ahead of the main body in canoes and boats, and arrived at Palimbang after nightfall on the 25th April., Escaping attemped assassination by a Malay on the way, he passed through burning streets to the palace, from which the Sultan had fled, barricaded all the entrances but one, and stationed a guard of grenadies at the principal gateway. The remainder of the force arrived next morning. By these bold and well-devised proceedings the fort, armed with 242 guns, was occupied without loss, the people being overawed by the intrepid bearing of the British commander.

Shortly afterwards the Sultan of Mataram, who had his fort at Jogyacarta in the south of Java, and stood at the head of a confederacy of native princes, proposed to form a combination for the destruction of all the Europeans in the island. Gillespie, accompanied by the Lieutenant-Governor and a detachment of troops, arrived at the fort on the 17th June. After fruitless negotiations the place was taken by assault three days later, after a severe conflict in which the British commander and nine other officers were wounded and 90 men killed and wounded. This expedition put an end to all fear of insurrection, and peace was established on a firm basis throughout Java and its dependencies. Shortly after these events, Gillespie quarrelled with Stamford Raffles, the newly appointed Civil Governor of Java, and was removed as a Major-General to command the Meetut division.

When the war with Nepal broke out in 1814, General Gillespie took the field with his division. On the 31st October he attacked the fort of Kalunga, near Dehra Dun, but his troops were repulsed more than once. The General then tried to force an entrance at the head of a party of dismounted Irish Dragoons,

when he fell, shot through the heart, a fitting termination to his glorious career. His remains were taken to Meerut for internment, where the monument over his grave may still be seen.

Gillespie was not a great general. Indeed he had no opportunity of exhibiting his capacity in an independent command in the field. But as a brave and daring leader of men, possessed of remarkable courage, resolution, decision and energy, he is unsurpassed in the annals of our country, and as such he may well be held up as a noble example to others.

The fort of Vellore is now abandoned, and its massive granite wall are the sole witnesses of the stirring past. But, standing at the gateway one can hear in fancy Gillespie and his galloper guns come thundering up the road from Arcot.

MOUNTAIN GUNS IN MOUNTAIN WARFARE.

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MAJOR F.O. WYATT M. V.O., R.A.

It would be as well to begin by explaining that the notes embodied in this article are made with special reference to the tecent Mahsud Expedition, beginning from the time when General Baldwin set out on March 3rd, 1917, to relieve Sarwekai, and covering the whole period up to July this year.

As suggested the whole has been divided into six sub-headings:—Attack, Retirement, sending up Piquets, with-drawing Piquets, Intercommunication, and Fire by Night; and if it is found that each of these fine themselves down to a plea for closer co-operation between the Infantry and Artillery, it can only be said that such is the unvarying principle of F. A. T., and that without it the value of guns in Mountain Warfare is materially diminished.

Nowadays everyone is conversant with the methods adopted by Artillery in Europe, and with the practice if not the principle of "forward observation." But in Trench Warfare the activities of both Infantry and Artillery are limited to certain spheres and do not partake of the mobile and varying conditions of the hillside; so that co-operation between the two is more a matter of organization than intercommunication, or of mutual conjunction with the clock, rather than with each other. In Mountain Warfare Artillery seldom get the opportunity, never the time, for indirect series and the guns are therefore brought well up in the firing line in close support of the Infantry. Under these conditions Artillery personnel and material are very vulnerable to enemy fire, and, unless the Artillery Commander is in the closest touch with the movements of the Infantry, he is continually faced with the problem of with-drawing his fire at a time when support should be most valuable, or of running the risk of losing his guns, or inflicting loss upon his own Infantry.

With these general remarks we may turn to the particular instances and nature of co-operation, taking first:—

Attack.—It is of the utmost importance, to insure the full benefit of Artillery co-operation, that Artillery Commanders should know not only the initial dispositions but the various occurrences, anticipated moves and particularly any information regarding enemy movements. To do this, close personal intercommunication between the C. R. A and G. O. C. are essential to avoid an unnecessary waste of time when Infantry apply to the G.O.C. for Artillery support. As in recent operations each Brigade was working with one Battery, this meant that co-operation took place between the G.O.C. and Battery Commander. It is essential that the B.C. should be in close touch with his guns, and therefore everything points to the G.O.C. taking up his position in the vicinity of the guns. This may at first sound an easy and onesided arrangement tor the Artillery, but it is not really the case. Battery Commander is trained to choose his position so that he can cover a wide field of fire, and be able to direct his energies on whatever point seems most in need of them, and from his point the G.O.C.. who is in touch with all his units, will probably see more than from any other position.

The same principle would naturally apply to a Battalion Commander to whom a Battery had been detailed; he should, at any rate in the initial stages of the attack, stay with the B.C. When he has to move forward he should be careful to keep in signalling connection with the Artillery, or if possible an Artillery Officer with his own signallers should go forward with him.

At all times Infantry Commanders have the right to call direct for Artillery support in cases of emergency, but in the event of their sending the Artillery Urgent call (S.O.S.) they are held responsible for justifying its use.

Artillery should not be wholly confined to a frontal attack on the stated objective, as in many cases invaluable results can be obtained by pushing a section out to a flank and so enfilading the enemy. Witness the attack of the 45th Brigade on the heights above NANO, on June, 21st. The attack was held up for a considerable time with all the Artillery of both Brigades massed on the front, and the heights were not eventually taken until the

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enemy were turned by the advance of the Mahendradals on the enemys' right flank, but without covering *enfilade* fire by the Artillery. Had a section been pushed out to the flank the position would in all probability have been taken with greater ease.

Should a section be sent away to a flank in this manner it must be accompanied by an escort strong enough to defend the guns in the event of an attack from an unexpected quarter.

Battery Commanders will endeavour to keep a section ready to push forward at the first available moment behind the Infantry, when it will probably be able to administer heavy punishment to the retiring enemy from the captured crest. This section's departure should be so timed that it will arrive almost simultaneously with the Infantry capturing the ridge. A section was so detailed at the Zaranni Pass on April 21st, and pressing forward up the TANGI was able to come into action near fhe KOTAL and bring heavy enfilade fire to bear on the enemy successfully.

The Ground of South Waziristan is ideal for demonstrating the protective cover afforded by service khaki, but it also showed clearly the disadvantages of its advantages. For Artillery watching the advance of Infantry over large areas the difficulty of picking up advanced troops on different parts of the field was very marked. Small flags would in many cases have been of incalculable aid and were carried with advantage by the 21st Punjabis at the first attack on Barwand (March 13th), without any apparent danger resulting to the Infantry.

Retirement.—Here again it is greatly to the advantage of the Artillery support if the Rearguard Commander can be with the Battery Commander, that is always within 1500 yards, often as near as 800 yards, from his rear party.

It may here be well to sketch roughly the idea of Artillery in retirement, and the steps taken to attain it. Artillery endeavour to work so that sections of guus are in position along the line of retirement about 12-1500 yards behind each other, that is to say so that they are covering up to a thousand or fifteen hundred yards of the ground covered by the section in front of them. In this way the whole of the ground along the line of retirement can

be brought under Artillery fire from the sections of guns, and fire maintained irrespective of sections coming out of action to retire.

This result can only be secured by continual practice, a quick eye for country, and highly trained detachments. The method adopted is as follows. The Battery is in action at the point from which the retirement will commence with only the "firing battery," bare back mules and the minimum number of ammunition boxes considered necessary. The remaining mules go back under the Captain who selects the position for the next section. This position will be chosen so that it affords a good field of fire, is as immune as possible from attack, and is capable of easy and quick evacuation in the direction of the line of retirement.

About 20 minutes before the timed retirement begins—or whatever period he thinks necessary to allow the section to reach its new position in time—the Battery Commander orders back two sections, leaving one in action. The Officer Commanding these sections gain all information they can en route from Road Sentries etc. of the position and strength of piquets, until they arrive at the first line mules where, having replenished their ammunition, one section will occupy the position chosen and the other will accompany the Captain and the first line mules to the second position he selects. And so the same process of selecting and occupying positions goes on in echelon to the rear down the line of retirement.

To enable this to be carried out successfully it is essential that the retirement be steady and continuous throughout. More particularly is it necessary that the B.C. should be in close touch with the O.C. Rearguard so that he can be informed when be may retire his guns, or, if it is necessary to hold on in support of a piquet in difficulties, see that the Infantry covering parties are steadied up to allow of the eventual retirement of the guns.

In the retirement from NARAI RAGHZA on June 25th, this scheme was successfully carried out without a casualty, despite the fact that large bodies of the enemy were observed collecting to attack the piquets round Camp; but the initial attempts to come to close quarters were immediately frustrated

so that after the 3rd position of the guns not a shot was fired. In this instance the Rearguard Commander went with the guns, the second in command being in charge of the rearparty and withdrawal of piquets and keeping in flag communication with the Rearguard Commander. As however there seems to be a division of opinion as to whether the Rearguard Commander should not go with the red flag, one may as an alternative suggest that an officer with an intimate knowledge of the position of piquets and their movements should be attached to the Artillery Command.

At the present there is no system whereby Artillery can tell when the last man has left the piquet, and it would be of considerable help if some scheme could be devised such as waving a flag by the last party just below the crest to notify their departure. The method now adopted is to watch for the movement in the piquet post and as soon as the piquet is seen to retire, fire over the piquet to prevent the enemy rushing the hilltop. Under these circumstances it can be seen how important it is that there should not be the slightest doubt about the exact position of piquets, and as Mahsuds often appeared dressed in khaki and weating Gurkha hats deception would be easy. In fact on more than one occasion Infantry were pointed out to us as enemy targets by their own officers.

Provided Artillery know the exact position of their piquets and the rotation of their retirement it is possible to give them continual Artillery support throughout the retirement. But if piquets are going to appear suddenly from unexpected quarters, if one piquet rushes down while another is under close observation, concentrated and definite support are impossible.

Sending up Piquets.—It is not perhaps necessary to explain that the notes under this heading and under the heading of "Withdrawing Piquets" refer to the taking of and withdrawal from points which are presupposed but not known to be held or attached by the enemy, while those under the heading of 'Attack and "Retirement" naturally imply the presence of the enemy.

The piquetting troops for a march during the present operations generally consisted of one Battalion and one section of guns. One section only is selected as it is essential that the Advance Guard should be compact, while in view of the surprise tactics adopted by frontier tribes it is almost inevitable that in the event of attack, the leading section will have to drop into action before the full development of the tactical situation. For the Battery Commander to come up with his reconnaissance Officer is only a matter of a few seconds when he can dispose of his sections from the Main Body to the best advantage, without—as would be the case were they on the Advance Guard -blocking the road to other troops, or following the dangerous practice of decreasing fire in one direction to utilize it in another. In the ZARANNI PASS it was found that the sections were able to come from the the Main Body with the utmost promptitude into action in the positions selected, which would have been impossible, had they all been on the Advance Guard where the section came under fire from the first shot.

On these considerations there will be one section only with the Advance Guard, and it raises a point which may be worth mentioning. The Advance Guard will be commanded by a very senior, the section by a very junior Officer. This means that unless the A. G. Commander willingly gives the Artillery Commander all the information he can of the strength and position of his piquets, he puts the junior in the position of continually having to thrust himself forward to ask questions, or of going without information which renders his section useless.

Piquetting as one has done during the last four months with some eight or ten regiments it is impossible not to be struck by the lack of uniformity in methods of piquetting. This is however quite outside the Artillery Commander's work, except in that it often affects the composition of the marching column. The most convenient thing for Artillery is to be given their escort of a full platoon, and be able to march at the rear of the Main Guard of the Advance Guard. Many Advance Guard Commanders ask for their guns to march behind the

leading company which they immediately appropriate for piquetting purposes, and seem mildly surprised if one suggests that it is inadvisable for guns to follow hot-foot on the heels of the Advance Scouts. A Mountain Gun fires with perfect accuracy from 1000 to at least 2500 yards, so that no material advantage can be gained by having it 100-150 yards nearer its supposed target; on the other hand its efficiency may be considerably impaired if the gun, before coming into action, has to be disinterred piecemeal from beneath the bodies of mules. On April 21st, an Advance Guard section was hurried forward within two or three hundred yards of the enemy's position by the Advance Guard Commander. Both rangetakers and gun detachments suffered heavily, and it is only a tribute to the handling of the guns in action that they were able to fire with success before being ordered to retire from the position by the G. O. C.

The consideration of time on the march generally makes it impossible for guns to come into action to support piquets to the tops of hills, but provided full information is given, a good detachment should always be able to come into action and fire its first shell accurately in one minute.

The Section Commander should always accompany the Advance Guard Commander having with him a signaller to keep in continual touch with the section behind, his range-takers, director, and if possible a mounted man who can be despatched to the Battery Commander to inform him the moment the section is coming into action.

The Advance Guard Commander should tell the Artillery Commander any information he has regarding the proximity of the enemy, point out to him accurately—and not by waving his walking stick at the horizon—where his piquet is to be placed, and tell him at the time when they are being despatched. The Artillery Commander will make himself acquainted with the ranges to the various piquet posts and surrounding hills, taking angles of sight where it is necessary and generally accumulating the information required to bring his section into action without delay.

In passing through narrow and dangerous "tangis" it may be found advisable to drop a section in a commanding position at the mouth, and to follow the piquets through. In this case it will save men and animals if a section is detached from the Main Body to join the Advance Guard, letting the original A. G. Section join the Main Body as it comes up. In dangerous localities, or where large convoys have to be guarded it may be advisable to keep a section in action supporting piquets throughout their tenure of the posts. In this case sections will move up from the Main Body to the Advance Guard in rotation, being left on the road at points of vantage and remaining in action until the withdrawal of the piquets. But it must be noted that to carry this out effectively will require considerably more guns than one Battery to a Brigade.

In the TANAI—WANO march one section was always detached to support the piquets in the TANGI and to cover a hill about 2000 yards away, which the nature of the ground forbade piquetting.

The whole experience with the Mahsuds points to the fact that the chief danger lies in the sending up piquets and in retirements. The enemy is always expected but seldom anticipated. As the troops must always be ready for attack, so the Artillery must always be ready to open fire, but the method of making them ready is by putting information at their disposal and not by bringing their guns into the vanguard where they will only come under fire before a position can be selected.

Withdrawing Piquets.—One may perhaps be allowed to bring up a point which has nothing to do with co-operation. In nearly every case the withdrawal of piquets follows on the passage of a convoy of camels. It is most important that the Rearguard Commander should let the camels get well away before piquets are withdrawn. Certain camels have fixed ideas that the way to march is to sit down in the middle of the road and hold up the remainder of the convoy for half an hour. At least twice—both occasions being on the TANAI-WANO-march under different rearguard Commanders from different Regi-

ments—it happened that piquets were recalled in the ordinary course of events, the Rearguard came round the corner and found themselves confronted with a long vista of camels stretching, for all one could tell, into eternity. One was then faced with the alternative of replacing piquets or sitting on the road without them until the camels choose to move forward. This is however beside the point.

The attachment of one section to a Rearguard is unsatisfactory from an Artillery point of view, and it must be distinctly understood that it is only a preventive measure in case of necessity. The section should march with its own escort at the head of the Rearguard Main guard, and will be accompanied by its section Commander. In the event of a piquet being attacked he will bring his section into action with as little delay as possible and give all the assistance he can, but it is impossible to be prepared for action as in the case of an advance where halts are necessary and frequent. Working through unknown and dangerous ground the only satisfactory method to adopt is that already given under the heading of "Retirement."

Where the ground and piquet positions are well known to troops who work regularly in that locality, it is generally possible and best to move the section well forward and drop it into action at some point of vantage covering a danger zone; but this can only be done where the Artillery Commander is conversant with the ground, and where the usual piquet posts have been used.

Intercommunication.—The chief difficulty in intercommunication has always been that, although the Infantry may be willing and anxious to give advice of enemy movements, they very seldom know the way to do it, so that Artillery can bring fire to bear on the point without the waste of time involved in sending an observation Officer forward.

In the attack on the NANO heights the Mahindra Dals called for Artillery support, and fire was promptly brought to bear on the ridge which was their immediate objective, and where enemy could be observed. In point of fact their advance was being held up, and they were suffering very heavily from a few

snipers securely secreted in rocks to their right, whom in all probability a couple of well aimed shells would have dispersed.

All the information required can however be given quite simply by Infantry or a single piquet. The Commander first calls up "B.C.O." and imagines that his light forms the centre of a clock on which the B.C.'s light is at six. He is then in a position to describe his target. "Enemy 2 o'clock, 300 yards." The Artillery Officer is trained to make his calculation on this data, and accurate fire can be brought to bear at once. Piquet will subsequently signal "so many yards over or short," or "so many yards right or left," and the B.C. taking into consideration the point of view of the piquet, and knowing the angle subtended by any given distance at any given range, will make the necessary alteration. This was found to work successfully with a piquet of the 1/25th Londons at ISPANA RAGHZA and NARAI RAGHZA, while at the latter place a piquet of the 54th—with an Officer in charge—was able to signal valuable assistance to observation, when the guns were firing on the SHRAWANAI KOTAL. The system is quite simple, and there seems no reason why, with careful explanation, it should not work feasibly with Indian troops.

Fire by Night—Although with regard to night firing the usual and best advice is "Don't," on this expedition it has been found that piquets have during the night asked for, and, they said, received valuable support. As an instance of this is quoted the attack on the 54th Sikhs' piquet at BARWAND on the night of the 19/20th June. That this support was able to be given accurately is due chiefly to the 2.75 B.L. fitted with the Mark 7 dial sight, which enabled the gun to be laid by night on the piquet camp and fired at ranges and angles calculated during daylight.

The 10-pdr. B.L. is not suitable for accurate night work, and with the class of star shell provided it is questionable whether the effect of even this firing is not more disastrous to the camp than it is to the enemy. So much was this found to be the case that after the first few days no embrasures were

made in the Battery perimeter. At NILI KACH the camp was rather badly sniped one night and was answered by a fusilade from all sides of the perimeter. Two star shell were fired which certainly surprised the camp into silence—in itself an excellent result—but at the same time every horse in camp went for and took the perimeter with a unanimity which would have gladdened the hearts of an Aiutree crowd.

And so to draw conclusions from the whole matter.

The Artillery must work in the closest conjunction with the Infantry, if results of any value are to be attained. The intercommunication must be more intimate than can be supplied by field signalling apparatus. The Artillery Commander is trained in selecting positions from which he can cover the largest field of fire.

Let the G.O.C., keep with the Artillery Commander and directing operations from there, gain the best view of the action before him, and working in close conjunction with his Artillery get the best use out of his guns.

TRANSLATION FROM RUSSIAN NEWSPAPERS.

The Rech of 2nd-15th July 1917.

Finland.

Discussing the demands of the Finnish Diet for the immediate removal of Russian troops from Finland, the writer of this article says that in view of the immense strategical importance of Finland to Russia, such demands must not be complied with. Rather, considering the present signs of a German advance on Petrograd, the number of Russian troops should be increased. Finland represents the right flank advanced defences of Petrograd so that its evacuation by Russian troops would enable the Germans to turn the right flank of the whole Russian front. Mines laid in Finnish territorial waters would be removed and Cronstadt would be left uncovered. the Finnish frontier is only 30 versts (20 miles) from Petrograd, the enemy could possibly bombard it, after occupying Finland, with long range guns, and could certainly subject the capital to intense air raids. The Baltic fleet would be deprived of its bases, and the Murmansky railway, which is of such importance to Russia, would be so jeopardised as to render its use inadvisable.

Whatever may be the ultimate policy of Russia towards Finland it must be settled by discussion between the two countries. As regards the billetting of Russian troops in Finland this cannot be now regarded as a political question, but purely as a strategical and military question, which must be decided by the Russian General Staff, who can hardly consent to the outrageous demands of the Finnish Diet. Such consent would entail the loss of the capital and the severance of the continuity of the Northern and Southern Russian fronts, in fact it would create such a situation as would render it useless to continue the war.

It is inconceivable that those making such demands can be totally unaware of their strategical results to Russia, and therefore the only conclusion is that these demands emanate

110 Translation frem Russian Newspapers.

from Berlin and that this treachery has been worked up and paid for by German agents: but new and free Russia will not allow her liberty to be betrayed in this way and will prevent any such demands being acceded to at the present time.

In the same paper a correspondent gives an account of an interview with M.A. Stakhovitch, the Governor-General of Finland. The Governor stated that to most of the Russians living in Finland the proposal of separation from Russia came as a surprise; he himself thought that the Finns were trying to play a "slim" game and rush things through, relying on the internal troubles in Russia and the depressed morale and bad discipline of the Baltic fleet. The Finns argued that the late Tsar, Nicholas Romanoff, in abdicating the throne, abdicated also to the Finnish people his title of Supreme Prince of Finland. This, of course, was not so, for he abdicated his rights not to any particular section but to the whole of the Russian people, and, patient as the Russian people were, the Finns would find that their patience had its limits. They had met the Russian democratic deputies and sent them away with certain moderate changes and measures agreed to by both sides, and yet the evening of the day of the Russian deputies' departure these had been renounced for less moderate ones. He thought that, if the Finns looked into history a little further back than that of the last few years, they would find that their country had never been independent but had always been under some foreign Suzerainty and he recommended them to consider the example of Schlesig-Holstein before proceeding further on their present course.

In the matter of finance and exchange, the Finns had adopted a very insulting and ungracious attitude towards Russia. They had refused to touch the Russian loan of 350 million marks, and after making several impossible and openly insulting proposals, such as demanding Russian telegraphs or government buildings as security, which the Russians refused, they now proposed to lend money at the rate of exchange of 130 marks for 100 roubles, which was an impossible proposal. (Note 100 roubles, should be about £ 10-11-0; it is not known what the precise value of the

Translation from Russian Newspapors.

Finnish mark is, but presumably about the same as the English shilling). The question of exchange badly needs regulating for at the present, said the Governor, each individual can bargain for himself and their is a regular trade now in Finland and much speculation going on, based on the fluctuating value of money.

QUARTERLY SUMMARY OF MILITARY NEWS AND ITEMS OF INTEREST.

ARMY HEADQUARTERS.

been taken over by Government whilst on Field Service overseas, will be allowed free conveyance for his new chargers from the station in India where purchased to the station to which he is posted on return from service. The concession will be restricted to the number of chargers the officer is required to maintain in his new appointment or those taken over by Government, whichever is less, and the cost is not to exceed that which would have been incurred had the chargers been brought from the port of disembarkation.

(Authority). — Army Department letter No. 12930, dated 29th August 1917.)

- 1133. Passages—Sea.—When an officer has taken a passage for his family from India to a British Dominion after the outbreak of war, but within six months before or after the date on which he is warned for active service overseas, the actual cost of such passage, not exceeding the rate laid down in paragraph 41-I, Army Regulations, India, Volume X, clause 1 (b) or 2 (b), as the case may be, shall be refunded, less the usual messing charges.
- 2. Claims for refunds of passage money falling under the above should be disposed of accordingly.

(Authority.—Army Department letter No. 13327, dated 5th September 1917.)

- of I. A. O. No. 291 of 1917, it has now been decided that war leave, not exceeding 60 days in any case, may be granted to officers all the year round instead of only during the leave season.
- 1160. Chargers.—It has come to notice that officers who have
 purchased chargers from the Army Remount Department have subsequently offered these for sale
 to civilians. In this connection the attention of all officers is drawn

to Army Regulations, India, Volume II, paragraph 749, which clearly defines the method by which a selected charger may be disposed of. This procedure is to be strictly adhered to.

posed for the assembly of the first six courses in bombing to be held at the Central Bombing School, Mhow, commencing in November 1917:—

1st Course ... 19th November to 12th December 1917.

2nd Course ... 3rd January to 26th January 1918.

3rd Course ... 13th February to 9th March 1918.

4th Course ... 18th March to 10th April 1918.

5th Course ... 18th April to 11th May 1918.

6th Course ... 3rd June to 26th June 1918.

- 2. The dates for the assembly of subsequent classes will be published in India Army Orders in due course.
- 3. Each class will consist of 90 students, British and Indian, and will last for 21 working days.

The allotment of vacancies at these classes will be arranged by the commandant of the above school in direct communication with general officers commanding.

- 1162. Drill and Instruction.—Instructions for students attending the Central Bombing School at Mhow, commencing in November 1917:—

 For all students.
- I. Arrivals:—Students will arrive at Mhow one day prior to the commencement of the class for which they are detailed.

The date and hour of arrival will be reported to the commandant at least three days in advance.

- 2. Dress: Parades will be in drill order khaki.
- 3. Books:—The "Training and Employment of Bombers" will be brought by all students; note books will be provided by the school, to all students, on payment.
 - 4. Dogs:—Students are not to bring dogs with them.
 - 5. Equipment:—Rifles and bayone's are not to be brought.

 For Officers.
- 6. Accommodation:—Officers should bring complete camp furniture with them as unfurnished bungalow accommodation only is provided.
 - 7. Bicycles:—Officers are recommended to bring bicycles.

1326. Rewards.—The following Army Department Notification 26th Nov. 1917. is re-published:—

Notification No. 1826, dated Delhi, the 5th November 1917. The following Resolutions passed by both Houses of Parliament on 29th October 1917, and ordered to be communicated to all officers and men, are published:—

"That the thanks of this House be given to the officers, petty officers and men of the Navy for their faithful watch upon the seas during more than three years of ceaseless danger and stress while guarding our shores and protecting from the attacks of a barbarous foe the commerce upon which the victory of the Allied cause depends.

"That the thanks of this House be given to the officers, noncommissioned officers and men of the British Armies in the field, and also to the woman in the medical and other services auxiliary thereto, for their unfailing courage and endurance in defending the right amid sufferings and hardships unparalleled in the history of war and for their loyal readiness to continue the work to which they have set their hands till the liberty of the world is secure.

"That the thanks of this House be accorded to the gallant troops from the Dominions overseas, from India, and from the Crown Colonies who have travelled many thousands of miles to share with their comrades from the British Isles in the sacrifices and triumphs of the battlefield and to take their full part in the struggle for human freedom.

"That the thanks of this House be accorded to the officers and men of the Mercantile Marine for the devotion to duty with which they have continued to carry the vital supplies to the Allies though seas infested with deadly peril.

"That this House doth acknowledge with grateful admiration the valour and devotion of those who have offered their lives in the service of their country and tenders its sympathy to their relatives and friends in the sorrows they have sustained."

REVIEWS OF BOOKS. "Q" Tips. Administrative Staff Work.

ву "А. Q."

Published by Forster Groom & Co., Ltd., 15 Charing Cross, London, S. W.

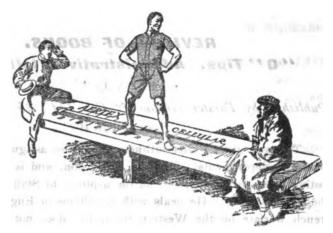
The book gives a brief outline of the duties assigned to the various Staff and departmental officers of a Division, and is intended, as the author states in his prepace, for the aspirant to Staff employment, on the A. and Q. side. He deals with conditions in England and normal trench warfare on the Western front, but does not touch upon the special requirements of the intensive fighting in that theatre of war.

It is a pity that he has dealt so briefly with the organization of the Division as compared with the detail given of some of the technicalities of supplies and requisitioning, and the procedure of Courts Martial. In dealing with Brigade groups he omits the Brigade Machine gun Companies and Trench Mortar batteries; he does not explain that for movements by road and rail a Division is divided in three groups only, the Divisional troops being distributed amongst the three Infantry Brigade groups, except when the Artillery moves separately. No description of the Divisional Train, the Divisional Supply Column, the Divisional Ammunition Column, and the Ammunition Sub-Park is given, though reference is made to these in the book. These particular units, and their respective functions, present much difficulty to the "learner".

The paragraph on Ammunition is incorrect and gives no idea of the importance of this subject.

The statement at the Commencement of Chap. V, that the D.A.Q.M.G. "should have had many years of experience in the A.S.C.'s is one with which we cannot agree. That he should have a thorough knowledge of the working of the A.S.C. is true, but what is really essential is that he should be fully experienced in regimental conditions, both in and out of the trenches.





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Mr. Henderson takes this opportunity of counselling Military Officers who have not yet insured not to be deterred from going into this question during the War by apprehensions as to the largeness of the extra premiums required to cover War risks. Many Officers are serving under conditions which do not involve payment of such extras, and even in those cases in which in consequence of service at one of the Fronts the payment of War risk extras is, or is likely to be, a liability, Mr. Henderson can recommend a highly advantageous scheme by which many of the drawbacks attending delay and postponement of Insurance can be obviated.

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Aeroplane Speaks, The		Barber, F. Whittall, W.
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Ambala to Peshawar by Motor Car, i		Suith, Vincent. A.
guide to places of interest on the Road.		Newell, Lt. Colonel H.A.
Arabic of Lower Mesopotamia, Notes of		Meyen, Dr. Colouel 12.11.
a - 11 - a - 1 - 1	0 040	Kelly, Lt. T. J.
Arabic of Lower Mesopotamia, Spoken .		Ess, Rev. J. Van.
Army Regulations Vol VIII "Veterinary".	7	Official.
Army Regulations Vol X "Passages" .		Omeiai.
	F. 348	Childs, W. J.
	K. 157	Gibbs, Philip.
Beseiged in Kut and after		Barber, Major C. H.
	M. 904	Whittall, W.
British Empire, Naval and Military geog		, , , , , , ,
raphy of the		Cornish, Vaughan.
Britling (Mr.) sees it through		Wells H. G.
Castes, Punjab		Ibbetson, Sir Denzil, K.C.S.
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Century of war, A (1815-1914)	1 34 000	Stevenson, Capt. G. de St. C
Communication, Lines of	1	Agate, Captain J. R.
Commission, Report on the Mesopotamia		Official.
Courts of Inquiry	0 24	Thomas, Capt. K. G.
Dardanelles Commission (First Report)		Official.
East, Early English adventures in the		Wright, Arnold.
Europe, Expansion of	1	Muir, Ramsay.
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Fronts, on two	K. 161	Alexander, Major H.M.
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and Military)		Cornish Vaughan.
Indian Year Book 1917		Reid, Sir S., edited by.
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Marne Campaign, the	1	Whitton, Major.
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Mesopotamia (Field Notes)		General Staff India.
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of Lower	1 0 040	Kelly, Lt. T. J.
Mesopotamia, Spoke Arabic of Lower		Ess, Rev. J. Van.
Mesopotamia Commission, Report on The		Official.
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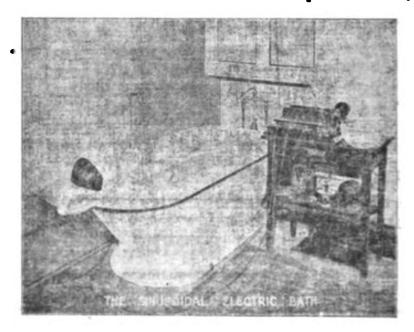
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The manœuvres of the future, and the general principles on which higher peace training should be conducted in view of the lessons of the present war.

The following are the conditions of the competition:

- (1) The competition is open to all gazetted officers of the Civil Administration, the Navy, Army, or Indian Defence Force, who are members of the U. S. I. of India.
- (2) Essays must be printed or type-written and submitted in *triplicate*.
- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Essays are to be strictly anonymous. Each must have a motto, and enclosed with the essay there should be sent a sealed envelope with the motto written on the outside and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1918.
- (6) Essays will be submitted for adjudication to Referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of the successful candidate will be announced at a Council Meeting to be held in August or September 1918.
- (8) All essays submitted are to become the property of the United Service Institution of India, absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays should not exceed about 15 pages of the size and style of the Journal, exclusive of any appendices. tables or maps.

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80th June 1917.

Secretary, U.S. I. of India.

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PRIZE ESSAY GOLD MEDALLISTS.

'(With rank of Officers at the date of the Essay).

1872...ROBERTS, Lieut.-Col. F. S., v.C., C.B., R.A.

1873...COLQUHOUN, Capt. J. A. S., R.A.

1874...Colquhoun, Capt. J. A. S., R.A.

1879...ST. JOHN, Maj. O. B. C., R.E.

1880...BARROW, Lieut. E. G., 7th Bengal Infantry.

1882...MASON, Lieut. A. H., R.E.

1883...Collen, Maj. E. H. H., s.c.

1884...BARROW, Capt. E. G., 7th Bengal Infantry.

1887...YATE, Lieut. A. C., 27th Baluch Infantry.

1888... MAUDE, Capt. F. N., R.E.

Young, Maj. G. F., 24th Punjab Infantry (especially awarded a silver medal).

1889...Duff, Capt. B., 9th Bengal Infantry.

1890...MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.

1891...CARDEW, Lieut. F. G., 10th Bengal Lancers.

1893...Bullock, Maj. G. M., Devoushire Regiment.

1894...CARTER, Capt. F. C., Northumberland Fusiliers.

1895...NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.

1896...BINGLEY, Capt. A. H., 7th Bengal Infantry.

1897...NAPIER, Capt. G. S. F. Oxfordshire Light Infantry.

1898...Mullaly, Maj. H., R.E.

CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).

1899...Neville, Col. J. P. C., s.c.

1900...THULLIER, Capt. H. F., R.E.

LURBOCK, Capt. G., R.E., (specially awarded a silver medal).

1901...RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.

1902... Turner, Capt. H. H. F., 2nd Bengal Lancers.

1903... HAMILTON, Maj. W. G., D.S.O., Norfolk Regiment. BOND, Capt. R.F.G., R.E., (specially awarded a silver medal).

1904...MACMUNN, Maj. G. F., D.S.O., R.F.A.

1905...Cockerill, Maj. G. K., Royal Warwickshire Regiment.

1907...WOOD, Maj. E. J. M., 99th Deccan Infantry.

1908...JEUDWINE, Maj. H. S., R.A.

1909...MOLYNEUX, Maj. E. M. J., D.S.O., 12th Cavalry.

ELSMIE, Maj. A. M. S., 56th Rifles, F. F., (specially awarded a silver medal).

1911...Mr. D. PETRIE, M.A., Punjab Police.

1912...CARTER, Major B. C., The King's Regiment.

1913... THOMSON, Major A. G., 58th Vaughan's Rifles (F. F.)

1914...BAINBRIDGE, Lieut.-Col. W.F., D.S.O., 51st Sikhs, (F.F.)
NORMAN, Major C. L. M.V.O., Q. V. O. Corps of Guides
(specially awarded a silver medal).

1915...No award.

1916...CRUM, Major W.E., V.D., Calcutta Light Horse.

1917...BLAKER, Major W. F., R. F. A.

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4. The award of medals is made by His Excellency the Commander-in-Chief as Vice-Patron, and the Council ofsh ex United Service Institution, who were appointed administrator of

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- 5. Only officers and soldiers belonging to the Army in India (including those in civil employ) are eligible for the award of the medal.*
- 6. The medal may be worn in uniform by Indian soldiers on ceremonial parades, suspended round the neck by the ribbon issued with the medal.

Note.

- (i) Personal risk to life during the reconnaissance or exploration is not a necessary qualification for the award of the medal; but in the event of two journeys being of equal value, the man who has run the greater risk will be considered to have the greater claim to the reward.
- (ii) When the work of the year has either not been of sufficient value or has been received too late for consideration before the Council meeting, the medal may be awarded for any reconnaissance during previous years considered by His Excellency the Commander-in-Chief to deserve it.

MacGregor Memorial Mcdallists.

(With rank of Officers at the date of the Award).

1889...Bell, Col.M.S., v.C., R.E. (specially awarded a gold medal). 1890...Younghusband, Capt. F.E., King's Dragoon Guards.

1891...SAWYER, Major H. A., 45th Sikhs.

RAMZAN KHAN, Havildar, 3rd Sikhs.

1892... VAUGHAN, Capt. H. B., 7th Bengal Infantry.

JAGGAT SINGH, Havildar, 19th Punjab Infantry.

1893...Bower, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).

FAZALDAD KHAN, Dafadar, 17th Bengal Cavalry.

1894...O'SULLIVAN, Major G. H. W., R.E.

MULL SINGH, Sowar, 6th Bengal Cavalry.

^{*} N. B.—The terms "officer" and "soldier" include those serving in the British and Indian armies and their reserves; also those serving in Auxiliary Porces, such as the Volunteers and Corps under Local Governments, such as Frontier Militia, Levies and Military Police, also all ranks serving in the Imperial Service Troops.

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1896...Cockerill, Lieut. G. K., 28th Punjab Infantry. GHULAM NABI, Sepoy, Q. O. Corps of Guides.

1897...SWYAYNE, Capt. E. J. E., 16th Rajput Infantry. SHAHZAD MIR, Dafadar, 11th Bengal Lancers.

1898...WALKER, Capt. H. B., Duke of Cornwall's Light Infantry.
ADAM KHAN, Havildar, Q. O. Corps of Guides.

1899...Douglas, Capt. J. A., 2nd Bengal Lancers.
Mihr Din, Neik, Bengal Sappers and Miners.

1900...WINGATE, Capt. A. W. S., 14th Bengal Lancers. GURDIT SINGH, Havildar, 45th Sikhs.

1901...Burton, Major E. B., 17th Bengal Lancers.
Sundar Singh, Colour Havildar, 31st Burma Infantry.

1902...RAY, Capt. M. R. E., 7th Rajput Infantry.
TILBIR BHANDARI, Havildar, 9th Gurkha Rides.

1903...Manifold, Lieut.-Colonel C. C., I.M.S.
GHULAM HUSSAIN Lance-Dafadar, Q. O. Corps of Guides.

1904...Fraser, Capt. L. D., R.G.A.
MOGHAL BAZ, Daradar, O. O. Corps of Guides.

1905...Rennick, Major F., 40th Pathans, (specially awarded a gold medal).

MADHO RAM, Havildar, 8th Gurkha Rifles.

1906...Shahzada Ahmad Mir, Risaidar, 36th Jacob's Horse. Ghafur Shah, Lance-Naik, Q.O. Corps of Guides Infantry.

1907...NANGLE, Capt. M. C., 92nd Funjabis.

SHEIKH USMAN, Havildar, 103rd Mahratta Light Infantry.

1908...GIBBON, Capt. C. M., Royal Irish Fusiliers.
MALANG, Havildar, 56th Punjabi Rifles.

1909... MUHAMMAD RAZA, Havildar, 106th Pioneers.

1910...Sykes, Major P. M., C.M.G., late 2nd Dragoon Guards (specially awarded a gold medal).

Turner, Capt. F. G., R.E.

KHAN BAHADUR SHER JUNG, Survey of India.

1911... LEACHMAN, Capt. G. E., The Royal Sussex Regiment.
GURMUKH SINGH, Jemadar, 93rd Burma Infantry.

1912...PRITCHARD, Capt. B.E.A., 83rd Wailahjabad Light Infantry (specially awarded a gold medal).

WILSON, Lieut. A. T., C.M.G., 32nd Sikh Pioneers. MOHIBULLA, Lance-Dandar, Q. V. O. Corps of Guides.

1913...ABBAY, Capt. B. N., 27th Light Cavalry.

SIRDAR KHAN, Sowar, 39th (K.G.O.) Central India Horse.

WARATONG, Havildar, Burma Military Police (specially awarded a silver medal).

1914...BAILEY, Capt. F. M., I.A. (Political Dept.)

MORSHEAD, Capt. H. T., R.E.

HAIDAR ALI, Naick, 106th Hazara Pioneers.

1915.. WATERFIELD, Capt. F. C., 45th Rattray's Sikins. ALI JUMA, Havildar, 106th Hazara Pioneers.

1916...ABDUR RAHMAN, NAIK, 21st Punjabis.

ZARGHUN SHAH, Havildar, 58th Rifles (F. F.)

(Specially awarded a Silver Medal).

1917...MIAN AFRAZ GUL, Sepoy, Khyber Rifles.

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United Service Institution of India.

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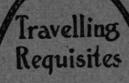












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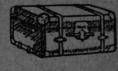
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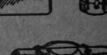














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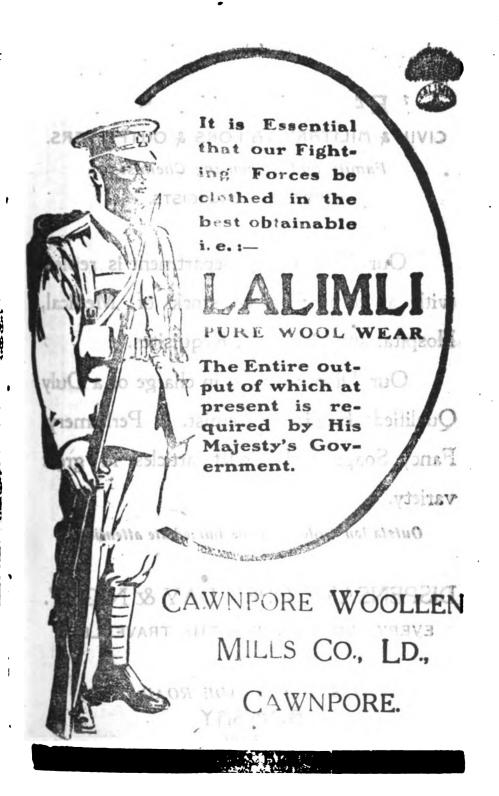
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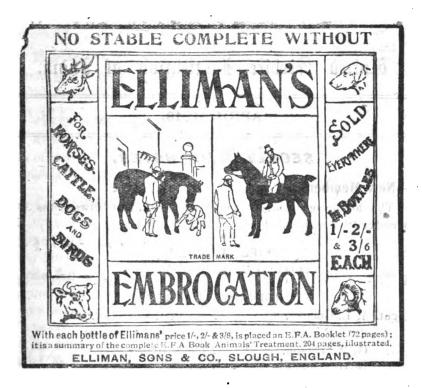
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Anited Serbice Institution of India.

APRIL 1918.

SECRETARY'S NOTES.

I.—New Members.

The following members joined the Institution between the 30th November 1917 and 28th February 1918 inclusive: -

LIFE MEMBERS

Captain J.W. Hely-Hutchiuson.

ORDINARY MEMBERS.

2/Lieut. A. L. Godden.

R. S. Finlow.

G. W. Leeson.

W.D. MacBey.

Captain A.L. Houston.

Captain H.Y. Necker.

2/Lieut. H.B.C. Hill.

Lieut. P.W. Davies. Captain C.N. Keith.

Captain D. Bogie.

Captain W. Thomas.

Captain J. W. Fairweather.

Captain H. H. Osborn.

Lleut, M.L. Griffith Jones.

2/Lieut. O.D. Champion.

2/Lieut. J.N. Taylor.

2/Lieut. R. Littlehailes.

2/Lieut. H.P.M. Rae.

Colonel A.M. Clark.

2/Lieut. H.G. Mearns.

A. Duncau.

Lieut. H. P. Ball.

2/Lieut, R.H. Middleton.

A.Y. Storrar.

Lieut. H.B. Saxby.

Captain L.A.G. Rogers.

Captain D.S. Mackay.

Captain L.H. Greg.

Captain G. Darby.

Lieut. G. H. Seater.

II.—Tactical Problems.

In order to assist officers working for tactical examinations, the-Institution has schemes with maps for issue to members only, at Rs. 5 each, which includes criticism and a solution by a qualified officer; of without criticism, Rs 2-8-0 each. 26 schemes are now available.

III.—Maps.

The Institution has for sale a variety of large scale maps (1 and 2 inches to one mile), price As. 8 each.

They are specially useful for instruction in map reading, tactical schemes and in preparation for examination, and can be had either or English or Indian country.

IV.—Premia for Articles in the Journal.

Articles accepted for publication in the Journal are paid for, and a sum of approximately Rs. 400 is awarded for articles and reviews published in each Quarterly Journal.

V.—Contributions to the Journal.

With reference to Army Regulations, India, Volume II, paragraph 487, and King's Regulations, paragraph 453, as amended by Army Order 340 of 1913, intending contributors to the Journal of the United Service Institution of India are informed that action to obtain the sanction of His Excellency the Commander-in-Chief to the publication of any article in the Journal of the United Service Institution of India will be taken by the Committee. Contributors are, therefore, responsible that the sanction of their immediate superior has been obtained, and this should be noted on all articles sent for publication. Articles need not be submitted in duplicate.

Contributors must have their articles either typed or printed.

VI.—Library Catalogue.

The library catalogue revised up to 1st January 1916 is now available. Price Rs. 2 or Rs. 2-4-0 per V.P.P. A list of books received each year is published with the January Journal.

VIL-Gold Medal Prize Essay 1917-18.

The Council have chosen as the subject for the Gold Medal Essay for 1917-18 the following:—

The manœuvres of the future, and the general principles on which higher peace training should be conducted in view of the lessons of the present war.

The following are the conditions of the competition:-

- (1) The Competition is open to all gazetted officers of the Civil administration, the Navy, Army and Indian Defence Force who are members of the U.S.I. of India.
- (2) Essays must be printed or type-written and submitted in triplicate,

- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Essays are to be strictly anonymous. Each must have a motto, and enclosed with the essay there should be sent a sealed envelope with the motto written on the outside, and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1918.
- (6) Essays will be submitted for adjudication to referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of a successful candidate will be announced at a Council Meeting which will be held in August or September, 1918.
- (8) All essays submitted are to become the property of the United Service Institution of India absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays should not exceed about 15 pages of the Journal when printed, exclusive of any appendices, tables or maps.

VIII.-War Maps.

War maps are on view in the Reading Room of the Institution with the positions of the troops, so far as is known, marked with flags, in each theatre of War.

IX.—Amendments to Rules of the U.S.I. of India.

SECTION VI-MEMBERSHIP.

Paras 2 and 3 of the above section have been amended to read as follows: —

Para 2.

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"Ordinary members of the Institution shall be admitted on payment of an entrance see (see para 4) of Rs. 10 on joining, and an annual subscription of Rs. 5 to be paid in advance. The period of subscription commences on 1st January."

Para 3 (a).

All members of the Institution resident in Simla for not less than

90 days during the year will be charged an additional subscription of Rs. 5 per annum from the 1st January 1917, except in the case of life members, when this additional subscription is voluntary.

X.—List of New Books.

,		
Rules and Regulations for the Iudian Defence Force	,	
(Official)	•••	A. 218
Memoirs of Count Lavallette by himself (2 Vols.)	•••	B. 273
Thirty years in India by Major N. Bevan (2 Vols.)	•••	B. 274
Memoirs of Prince Eugene of Savoy (translated by W.		
Mumford)	•••	B. 275
Walter Greenway-Spy and Hero by Robert Holmes	•••	B. 276
"Your Signature"-Guide to character from handwrit-		
ing by LtCol. H. A. Newell, I.A	•••	K. 165
Motor Manual	•••	K . 166
Elementary Internal Combustion Engines By J.W. Kersh	a w	K. 167
Shop Management by F. W. Taylor	•••	K . 168
The Indian Corps in France by LtCol. J.B. Mereweather		
		M. 906
Marching on Tanga by F. Brett Young	•••	M. 907
The British Campaign in France and Flanders By A.		
Conan Doyle (2 vols.)	•••	M. 908
Three Campaigns of Major-Genl. Sir A. Campbell's Army	z in É	
Ava by Henry Havelock		M. 909
Battles and Sieges in the Peninsula and South of Francisco	Ce	
by Lt. Genl. Sir W. Napier		M. 910
Panama and what it means by J. F. Fraser	•••	N. 386
History of the Corps of Royal Engineers by Whitworth		
Porter (2 vols.)	•••	O. 201
Administrative Staff Work by "A. Q."	•••	T. 443
The I. D. F. guide to Musketry Instruction by Captain		,
C Eyers		T. 444
	•••	
Field Artillery Training 1914 War Office London	•••	T. 445
Cyclist Training ,, ,, ,,	•••	T. 446

XI.—Indian Defence Force Essay, 1917.

Captain D. S. Mackay, East Coast Rifles, I. D. F., has been awarded 2nd prize for the best essay. The Council have withheld the 1st prize as none of the essays were judged to be up to the required standard,

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Amritsar	Ferozepore.	Multan.	Sialkote.		
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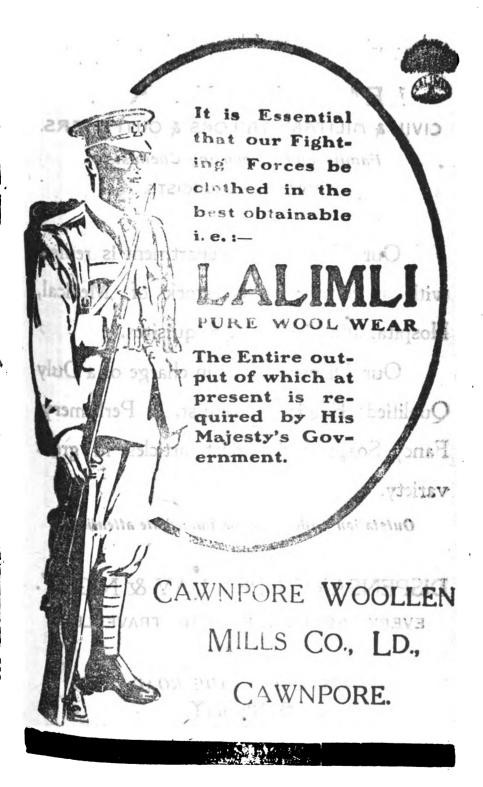
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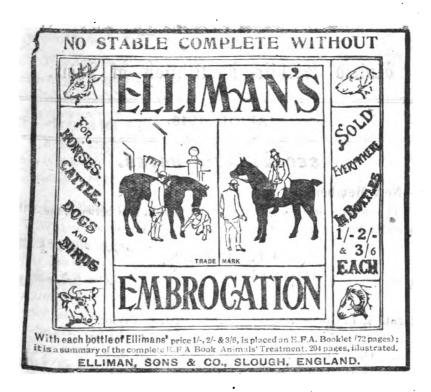
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# Anited Service Institution of India.

# **APRIL 1918.**

## SECRETARY'S NOTES.

# I.—New Members.

The following members joined the Institution between the 30th November 1917 and 28th February 1918 inclusive:—

#### LIFE MEMBERS

Captain J.W. Hely-Hutchinson.

#### ORDINARY MEMBERS.

2/Lieut. J.N. Taylor.

2/Lieut. H.P.M. Rae.

Colonel A.M. Clark.

Lieut. H. P. Ball.

Lieut. H.B. Saxby.

Captain L.H. Greg.

Captain G. Darby.

Lieut. G. H. Seater.

2/Lieut. H.G. Mearns.

2/Lieut. R.H. Middleton.

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Captain D.S. Mackay.

A. Duncan.

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2/Lieut. R. Littlehailes.

2/Lieut. A. L. Godden.

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Captain H.Y. Necker. 2/Lieut. H.B.C. Hill.

Lieut. P.W. Davies.

Captain C.N. Keith.

Captain D. Bogie.

Captain W. Thomas.

Captain J. W. Fairweather.

Captain H. H. Osborn.

Lieut. M.L. Griffith Jones.

2/Lieut. O.D. Champion.

# II.—Tactical Problems.

In order to assist officers working for tactical examinations, the-Institution has schemes with maps for issue to members only, at Rs. 5 each, which includes criticism and a solution by a qualified officer; of without criticism, Rs 2-8-0 each. 26 schemes are now available.

# III.—Maps.

The Institution has for sale a variety of large scale maps (1 and 2 inches to one mile), price As. 8 each.

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They are specially useful for instruction in map reading, tactical schemes and in preparation for examination, and can be had either or English or Indian country.

## IV.—Premia for Articles in the Journal.

Articles accepted for publication in the Journal are paid for, and a sum of approximately Rs. 400 is awarded for articles and reviews published in each Quarterly Journal.

# V.—Contributions to the Journal.

With reference to Army Regulations, India, Volume II, paragraph 487, and King's Regulations, paragraph 453, as amended by Army Order 340 of 1913, intending contributors to the Journal of the United Service Institution of India are informed that action to obtain the sanction of His Excellency the Commander-in-Chief to the publication of any article in the Journal of the United Service Institution of India will be taken by the Committee. Contributors are, therefore, responsible that the sanction of their immediate superior has been obtained, and this should be noted on all articles sent for publication. Articles need not be submitted in duplicate.

Contributors must have their articles either typed or printed.

# VI.—Library Catalogue.

The library catalogue revised up to 1st January 1916 is now available. Price Rs. 2 or Rs. 2-4-0 per V.P.P. A list of books received each year is published with the January Journal.

# VIL—Gold Medal Prize Essay 1917-18.

The Council have chosen as the subject for the Gold Medal Essay for 1917-18 the following:—

The manœuvres of the future, and the general principles on which higher peace training should be conducted in view of the lessons of the present war.

The following are the conditions of the competition:

- (1) The Competition is open to all gazetted officers of the Civil administration, the Navy, Army and Indian Defence Force who are members of the U.S.I. of India.
- (2) Essays must be printed or type-written and submitted in triplicate,



- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Essays are to be strictly anonymous. Each must have a motto, and enclosed with the essay there should be sent a sealed envelope with the motto written on the outside, and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1918.
- (6) Essays will be submitted for adjudication to referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of a successful candidate will be announced at a Council Meeting which will be held in August or September, 1918.
- (8) All essays submitted are to become the property of the United Service Institution of India absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sauction of the Council.
- (9) Essays should not exceed about 15 pages of the Journal when printed, exclusive of any appendices, tables or maps.

# VIII.-War Maps.

War maps are on view in the Reading Room of the Institution with the positions of the troops, so far as is known, marked with flags, in each theatre of War.

# IX.—Amendments to Rules of the U.S.I. of India.

SECTION VI-MEMBERSHIP.

Paras 2 and 3 of the above section have been amended to read as follows: -

#### Para 2.

"Life Members of the Institution shall be admitted on the follow-ing terms:

Rs. 75 plus entrance fee Rs. 10 (see para 4) or Rs. 85 in all. Para 3.

"Ordinary members of the Institution shall be admitted on payment of an entrance see (see para 4) of Rs. 10 on joining, and an annual subscription of Rs. 5 to be paid in advance. The period of subscription commences on 1st January."

#### Para 3 (a).

All members of the Institution resident in Simla for not less than

90 days during the year will be charged an additional subscription of Rs. 5 per annum from the 1st January 1917, except in the case of life members, when this additional subscription is voluntary.

# X.—List of New Books.

Rules and Regulations for the Indian Defence F	orce	
(Official) ·	•••	A. 218
Memoirs of Count Lavallette by himself (2 Vols.)	•••	B. 273
Thirty years in India by Major N. Bevan (2 Vols.)	•••	B. 274
Memoirs of Prince Eugene of Savoy (translated by	w.	
Mumford)	•••	B. 275
Walter Greenway-Spy and Hero by Robert Holmes	•••	B. 276
"Your Signature"-Guide to character from handy	vrit-	
ing by LtCol. H. A. Newell, I.A	. •••	K. 165
Motor Manual	•••	<b>K</b> . 166
Elementary Internal Combustion Engines By J.W. K	.ersha <b>w</b>	<b>K</b> . 167
Shop Management by F. W. Taylor	•••	K. 168
The Indian Corps in France by LtCol. J.B. Merewes	ther	
and the Rt. Hon. Sir F. Smith (2 copies)	M. 905 &	M. 906
Marching on Tanga by F. Brett Young	•••	M. 907
The British Campaign in France and Flanders By	A.	
Conan Doyle (2 vols.)	•••	M. 908
Three Campaigns of Major-Genl. Sir A. Campbell's A.	Army in	
Ava by Henry Havelock	•••	M. 909
Battles and Sieges in the Peninsula and South of I	France	• • • • •
by Lt. Genl. Sir W. Napier	•••	M. 910
Panama and what it means by J. F. Fraser	•••	N. 386
History of the Corps of Royal Engineers by Whitwe	ort <b>h</b>	
Porter (2 vols.)	•••	O. 201
Administrative Staff Work by "A. Q."	•••	T. 443
The I. D. F. guide to Musketry Instruction by Cap	otain	
C. Eyers	•••	T. 444
Field Artillery Training 1914 \ War Office London	•••	T. 445
Cyclist Training ) ,, ,, ,,	***	T. 446

# XI.—Indian Defence Force Essay, 1917.

Captain D. S. Mackay, East Coast Rifles, I. D. F., has been awarded 2nd prize for the best essay. The Council have withheld the 1st prize as none of the essays were judged to be up to the required standard,

# Secretary's Notes.

# XII. - Trophies.

The Council acknowledge with thanks, the presentation to the U.S. I. of East African Trophies, by Major General Sir M. J. Tighe, K. C. M. G., C. B., C. I. F., D. S. O.

# XIII.—Books.

The Council acknowledge with thanks the presentation to the Library of books, in memory of the late Lt.-Colonel G. H. Griffith R.E.

# United Service Institution of India.

# GOLD MEDAL ESSAY COMPETITION 1917-18.

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- (9) Essays should not exceed about 15 pages of the size and style of the Journal, exclusive of any appendices, tables or maps.

By order of the Council,

Simia 80th June 1917.

G. AIRY, MAJOR,

Secretary, U.S. I. of India.



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REVENUE	•••	•••	£1,560, <b>0</b> 00
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# United Service Institution of India.

Vol. XLVII.

# APRIL 1918.

No. 211.

# I. D. F. PRIZE ESSAY OOMPETITION. "IMPROVEMENT AND FURTHER DEVELOPMENT OF THE INDIAN DEFENOE FOROE."

BY

CAPTAIN D. S. MACKAY, EAST COAST RIFLES, INDIAN DEFENCE FORCE.

It is necessary before making suggestions for the improvement and further development of the Indian Defence Force, to review the material on which we have to work.

CLASSIFICATION OF CORPS.—The Defence Force, apart from the official classifications, can roughly be divided into

- (A.) Light Horse Corps. Rank and file Europeans. Officered by Europeans.
- (B.) Infantry Corps. Rank and file Anglo-Indians, with some pure Asiatics, and a sprinkling of Europeans. Officered by Europeans.
- (C.) Artillery, and Specialist Companies

  More nearly approximate to
  the Infantry Corps composition, but with men of a somewhat better type and physique.
- (D.) Railway Corps. Whose special conditions place them outside any ordinary scheme.

For purposes of this essay it is safe roughly to define the I. D. F. as being made up of only two classes, viz: Classes (A) and (B).

Again Class (A) has to be divided into (A, L) Planters Corps. (Such as Assam Valley Light Horse.) and what I call for lack of a better term (A, 2.) Provincial Corps (such as United Provinces Light Horse.)

Class (B) must be divided into (B, I.) Town Corps, (such as Calcutta Rifles) and (B 2.) Mofussil Corps, (such as East Coast Rifles.)

In the case of each of the above divisions, the conditions under which the Corps work and train show divergencies sufficiently marked to call for considerable differentiation in treatment.

It is not, however, proposed that these varying schemes shall be set forth here, but, when considering the suggestions made as a whole, the application of the proposals must be made always with the consciousness that the divisions, as set forth above, are very real. And these differences make it practically impossible to frame a scheme of improvement and development, which will apply to all Corps. The writer endeavours to state some some general principles only.

AIMS OF I. D. F. ACT.—The Indian Defence Force Act aims at causing every person qualified under the Regulations to undergo Military Training. From the force thus receiving training, it is designed that a percentage shall be taken, in reliefs, to put into practice the training received, by performing Military Service. It is thus evident that the bed-rock of usefulness of the force lies in the training, the service being the outcome of the training. Presumally the "Powers that be" will not, and cannot use any part of the force for service, unless the force, or that part of it to be used, has received adequate training.

Admittedly the most valuable part of the training will be received when the ment are on actual service; but the soldiers must in the first place be fit to be sent on such service as that for which they are required. Even garrison troops, in time of war, must be something considerably better than raw recruits.

(The great profilem of who can and who cannot be spared in Ind.a for three months General Service, does not, as I understand

it, come within the scope of this essay. Nor does the question of cost. The subject is purely that of the improvement and further development of the force itself as it stands).

STANDING OF OFFICERS.—The first task with most Corps is to demonstrate to the officers, N. C. O's., and men that the old Volunteering days, with their bad old customs, are finished. If the officers and men can be convinced that they are now soldiers, and taken seriously as such, the much lacking "military spirit" will automatically grow. How is this to be done?

To begin with the officers. In the days of the Volunteers the officer was so little of a soldier that he was not even allowed to call himself a soldier,—that is a Captain, or a Major, or a Colonel.

He was, and is, Mr. Jones, a School Inspector of the Province of Calbay; and a Captain in the Calbay Volunteer Rifles, of the Military Forces of India.

He must now be Captain Jones of the Calbay Volunteer Rifles, of the Military Forces of India; and School Inspector of the Province of Calbay.

That is speaking methaphorically, of course, to demonstrate briefly the spirit of the suggestion. Make more credit attach to "Jones"-for being a good Captain, than for being a good School Inspector. Let his "izzat" come from his Captaincy,—his living can come from his School Inspectorship.

Make the officers believe in themselves, and that they are doing something useful, and take them seriously. Attach honour to their Commissions, and make the Command of Battalions something other than part of the duty of high officials, or the mere hobby of successful men, who may be anything but soldiers.

Having thus demonstrated to the officer class of European that it is worth while being an officer, then, when you have attracted him into undertaking the work and responsibility,—educate him.

CLASSES OF INSTRUCTION.—Excellent beginnings in this direction have been made by admitting Indian Defence Force Officers

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CLASSES OF INSTRUCTION.—Excellent beginnings in this direction have been made by admitting Indian Defence Force Officers

to general and specialist Classes of Instruction. As regards these Classes, their main object at present is to give the junior officers instruction in musketry, or a grounding in drill; and the Field Officers a rough idea how to handle a tactical problem, and to write the orders for an operation in the field.

The objects must, of course, always remain the raison d'être of such Courses. But the greatest and most important object of such training as applied to the Indian Defence Force should be to show the officer what soldiering means, to give him a touch of discipline, confidence in himself, a taste for command, a knowledge of military customs, a demonstration of military life, a breath of the air of militarism.

This is what the civilian officer and non-commissioned officer most needs. He can acquire his musketry, and learn his drill meanwhile, but it is the discipline and military atmosphere which the Indian Defence Force officer at present most lacks.

How is this to be provided? Classes should not be formed of Indian Defence Force officers, or Indian Defence Force and Indian Army Reserve only. These men are all in the same boat, and cannot create the much needed atmosphere, or set one another the vital example in the spirit of the British Army.

The Classes should be well mixed with Regulars (in the few cases in which this is possible), and with Territorials. The best men,—not mere musketry instructors, or drill experts, must be invariably selected for Instructors on such Classes. They must be essentially soldierly officers, and rigid disciplinarians. That is the sort of thing the Indian Defence Force officer is at present looking for, and welcomes when he finds it.

The work must be hard, and the day full. The officer has had difficulty in obtaining these precious days, and he must not be allowed to leave the Class feeling that valuable time has been wasted.

BUSINESS PRINCIPLES.—The Indian Defence Force officer must be helped by the military authorities to obtain leave from his employers, whether Government or private, by being treated on business-like lines, and as a man whose soldiering is not his profession. The date and period of Classes should be stated early and definitely. Pay and travelling allowance should be paid when due.

OFFICERS TO COMMAND.—Commanding Officers of Corps should insist on the complete stamping out of the old custom of the running of Companies, especially in outlying stations, by Sergeant-Restructors. The Indian Defence Force officer must be taught to look on his Staff-Sergeant-Instructor as a professional adviser to be called in in case of need, like a doctor. The officer will learn little if he is never allowed to make mistakes:

It has been only too common to find the Instructional Staff acting—Sergeant-Major, as the Adjutant, and the Staff-Sergeant-Instructors, as Company Commanders, while the officers were relegated, sometimes only too willingly, to positions which were anything but those of officers of His Majesty's Forces. This state of affairs was due to a feeling of deference, principally arising from lack of knowledge of their work, and of military custom, on the part of the officers.

Let them acquire the "Military spirit" as suggested above, and that spirit will itself engender a keenness to work in the proper way, which will not be withstood.

Use of Qualified Officers and Non Commissioned Officers.—Officers and non-commissioned officers, who have qualified at Courses, should be made use of wherever possible, by their Commanding Officers. At present the general tendency is to regard those officers and men who know, and are keen on their subject, as cranks, if not as bores. This is, needless to say, quite wrong. Give the specialists opportunities to teach the other officers if they need it, and to teach the men at all times.

Training.—The finest training of all, attachment in the Company Training Season to Regular and Territorial Companies, is too obvious to need emphasis. But here again we come up against the ever to be remembered fact, that soldiering is the secondary occupation of the Indian Defence Force, and that the officers and men cannot get away from their civil avocations.

It is useful in discussing a subject of this kind to try and decide what is the most outstanding feature of goodness and badness in connection with the subject discussed. I venture to say that the most striking defect in the Indian Defence Force officers is the badness of his word of command. His best quality is his keenness. Words of command too often partake of the nature of requests, and lack the whip-lash quality which stings a man's understanding and muscles into instant obedience.

This defect can only be improved by precept and practice, but, in the present stage, more particularly precept. The solution of this enunciation of a simple fact is, I trust, to be found in the foregoing paragraphs; which also cover the uses to which the good quality of keenness can be put.

Training difficulties, as regards the rank and file, show much divergenc. One set of difficulties, which apply to the (B. 2.) Mofussil Corps, are nothing like so acute in the (B. I) Town Corps. I refer to the ever recurring problem of getting emough men on parade to enable serious and proper instruction to be given in the subject in hand.

THE PROBLEM OF THE DETACHMENT.—This may be called "the problem of the Detachment". The Detachment's total number may not be great, but it has to be divided into the (I) youthful, (under 41) and fit, (Class A, ); and the (2) older (over 41) and semi-fit (Class C.)

We thus immediately have two parties, needing two sets of instructors, and, in all probability, neither party strong enough to do Platoon drill, except perhaps with the makeshift of ropes.

The only solution appears to be to make both squads work together wherever possible, and only divide them when age and unfitness precludes the second squad from joining in the work in hand. The fact that some of the detachment are required to do four hours work per week, and the rest only one hour, further complicates the matter.

A TIME SCHEME.—A training scheme which the writer has seen in practice, and advocates if conditions require it, is that the parades be performed on the first five and last five work-

ing days of every month, 2 hours per parade, one parade per day. This arrangement gives 20 hours parades per month, and ten consecutive days training. 16 being the number of hours required under the Act, the 20 hours allotted leave a useful margin. This scheme allows officers and men, who is their civil capacities have to tour, to arrange their tours so that they can be in their station for parades. Men in outlying stations can also get in to the Training Centre for at least every other ten days training.

This ensures parades of the Detachments' maximum strength. The one hour per week men turn out with the rest when it suits them, so long as they perform their four hours drill per month. The scheme, needless to say, fulfils the requirements of the Regulations. It also makes it more of a practical proposition to draw up a programme, and to make the training progressive, if 10 consecutive days work can be put in.

In (B.I.) Town Corps, lack of numbers does not generally form a handicap, and it is possible to put the (2) Class men on to a progressive programme, which is impossible in the case of most small Detachments.

BANDS.—Many useful Regulations have been laid down to create efficiency, but the "psychological side", such as it is, of the problem has received no attention.

Indian Defence Force training is, in most instances, looked on as pure drudgery. This feeling was always endeavoured to be guarded against in the days of the old Regular Army. To interest the men was always a prime consideration.

There are, unfortunately, not many ways in which this can be done under Indian Defence Force conditions, especially in the case of the (B. 2.) Corps, whose scattered Detachments are working away with little of the "panoply of war." The interest of the parade solely depends on the knowledge and smartness of the officer conducting it.

One small suggestion the writer would make. Practically every Corps has a band of sorts, some good, some bad, and this band remains at Corps Headquarters all the year round. Expendi

ture should be sanctioned (in the cases of scattered Corps, who are, after all, the main problem,) from the Capitation Fund, whereby the band could be sent round for a week's visit to each principal Detachment once or twice in the year. The effect would be excellent, and the soldiers in those stations could not fail to be encouraged, and would feel that they are not forgotten.

PROFESSIONAL ELEMENT.—The wisdom of the introduction of a larger professional element is doubted. There is already too great a tendency to rely on the Staff and the Instructors. The Territorials survived the absence in many cases of professional Adjutants when they first came to India, and it is a moot-point whether having to stand on their own bottom did not hasten those Battalions towards self-reliance and efficiency.

Good and useful inspections by first class professional officers is valuable, and cannot be too much insisted upon. A good, active Adjutant is essential.

It was necessary in the time of voluntary service to appoint men as Commanding Officers who held influential civil positions. This was done largely in order that these Commanding Officers would influence men to join the Corps, and for other reasons of expediency. This did not tend to improve smartness, and, as the custom is now not necessary, only good soldiers should be appointed to command.

EXAMINATIONS.—Examinations should be at least as thorough as that for Certificates A. and B. in Officers' Training Corps.

A system of confidential reports should be instituted; and every officer and man should keep an equivalent of the regular soldier's Small Book.

CAMPS.—It is here that professional example and precept will most tell. On the one annual occasion when the largest possible body of the Corps is assembled, every advantage should be taken of the fact.

A smart section under a Sergeant, or as large a force as possible under a smart junior Officer, from a Territorial Battalion, should be sent to every Indian Defence Force Camp. This body of Territorials should for the time being form part of the Corps, and perform exactly the same work and duties. Given the right Commander, and sufficiently smart men, their presence in the Battalion would be of incalculable benefit as a leaven to the whole Regiment. Their every act and movement would be watched and imitated, and give that inspiration and spirit of emulation to the men who live all the year round far from military centres and example, which are so badly needed.

The old "social side" of camps must everywhere disappear. Soldiering should be the be-all and end-all, and the condition of a camp should as nearly as possible resemble a Territorial Battalion Training.

REWARDS.—As regards the Volunteer Decoration and Long Service Medal. These decorations are awarded on purely time qualification. Merely 20 drills and the Musketry course, fired annually for 16 years, automatically bring a medal. Great keenness, and good work, and 80 drills per year, brings no higher reward or recognition. This is palpably a wrong system, (although in vogue with the Territorials, who only do 12 years for their decoration.)

12 attendances at Camp out of the 16 years service, should be made an essential qualification for the medal.

It is certain that officers and men who go on General Service at least deserve more than those who drill in their stations. The Commander-in-Chief has, however, stated that he hopes General Service will be considered as "service," which presumably will carry its reward.

PLANTER CORPS are generally run on the old Colonial system of equality and fraternity between officers and rank and file. This is a most excellent thing in its way, but too much of it is not good, and certainly not military. In the old Volunteer days when the cement which held the force together was good-will, for no officer had any real authority, this state of equality and familiarity between officers and men

was the lesser of two evils. Either there had to be a good deal of freedom, or a very small Corps!

Times have changed, and stricter discipline must reign; but Planter Corps and Light Horse Corps in general can rest assured that what is lost in bonhomie will be gained in military efficiency, and discipline of the sort which alone can pull through a tight corner, or even stand a reverse in action.

DISCIPLINE.—The whole question of discipline in all Corps is a vital one. Very full Regulations and penalties, and more important still, the means of enforcing the latter, have been published, and an officer who cannot now maintain discipline by fairly and fearlessly using these aids to his own personality and authority, should no longer hold a Commission.

The above suggestions may appear somewhat superficial, but, until the working of the Indian Defence Force has received more practical demonstration, nothing very deep can be suggested, but only the wants and errors which most prominently call for present satisfaction or correction can be pointed out, and suggestions made for dealing with them, in order to improve and further develope the Indian Defence Force.

#### SOME BALKAN REMINISCENCES AND A MORAL.

# BA

## NOEL POCOCK.

Before the outbreak of the present conflict, the conviction was steadily growing in people's minds that the world had done with war. An eminent economist published a book * which demonstrated that under modern conditions war between civilised states was not and could not be made a paying proposition. He never said nor implied that because it would not pay it would not occur. It would have been quite as logical to proclaim that, because one cannot over-eat without getting stomach-ache, the dread shadow of stomach-ache was now lifted from the world for evermore. But, to an over-civilised and sheltered people, such a conclusion seemed unassailable. There was no money in the game. All right. War was "off."

And still the tension grew greater as the stored energy increased, and the unnatural state of peace continued, and town-bred nations vociferated still more loudly (as they piled up the ammunition) that war on the grand scale would be a calamity which the collective intelligence of man would refuse to tolerate. And then, without the slightest regard for the collective intelligence of man, the immense accumulation of pent-up energy burst the artificial dam that had held it in for so long, and the world was submerged in a cataclysm of war.

After the first shock of stupefaction that followed, the bewildered theorists changed their ground. This, they said, was the war that is going to end war.

They are still saying it. The Germans want them to say it. They would pay them to say it, if necessary. It is necessary in some cases.

Practical people know better than that. No practical person—nobody but a confirmed visionary—believes that the end of the present war is going to usher in the Millennium. In a less complex state, in a society in direct contact with the basic facts of life, it is recognised that, as long as there remains in this world

The Great Illusion, by Norman Augell.

anything that men consider worth fighting for, men will fight for it, and the strongest will get it. That, being the first law of existence, scarcely admits of argument. War is going on, because human nature is going on. And, what is more, it is not going to get easier; on the contrary, it is going to get harder.

What is the lesson which even now is being hammered into us, for which the world has pre-eminently to thank the German race? Undoubtedly it is that war is no longer an affair to be settled by proxy, between teams of trained specialists; it is no longer even a matter which can be decided by the whole manhood of a nation in arms; we are being pressed irresistibly back to fundamentals, to the realisation that, to win, a nation must put out the whole of its stamina and nervous force,—not only in fighting men and their equipment, and that stored energy which is credit, but every ounce that can by any possible ingenuity be impressed and made to tell. Because—if we don't do that in future, the other side will. If we go on relying any more on half measures, the other side won't.

This war is merely the tentative and half-hearted experiment by which we have discovered that.

I say "we have discovered that", because to us Western nations the idea is a new one, and is only now beginning to penetrate. As a matter of fact it is without exception the oldest idea under the sun. Actually, we did not discover the first law of nature; indeed, all we have managed to do is to forget it.

But if we Western nations have lost touch with essentials other people have not. Barely a year before the present war began, the Balkan States were reminding the world that there is only one way to win, and that is to go "all out". But rich, elderly people are not for taking lessons from youngsters. They say Children should be Seen and not Heard.

It has long been a custom to think and speak slightingly of the several races inhabiting the Balkans, to regard them as a crowd of obstreperous cut-throats, whose only claim to consideration is a sort of picturesque Ruritanian quality: to the average Briton the Serb is a preposterous mountebank brigand bristling with let-

hal weapons, who to his innumerable misdemeanours has added the crowning infamy of regicide. It is conveniently overlooked that the Serbs are not the only people whom history records as regicides.

This view of course arises from lack of knowledge; from that pride the results of which are proverbial. But what that lack of knowledge has cost us, how heavy that fall has been, is scarcely yet apprehended. If the nations of the West had taken into account the facts that the combined Balkanic forces were practically equal to those of a first-class power, and that without insuperable difficulty they could all have been brought solidly on to the side of the Enteute, it is quite conceivable (so long were the industrious Teutonic and Turkish propagandists in completing their sinister work in Bulgaria) that those Western Powers might have grasped the significance of the Danube before the Bulgars finally decided to throw in their lot with "le bloc Austro-Allemand", and so opened the road to the East, and, by thus prolonging the war until their new friends were able to bring about the débâcle in an already very sufficiently Teutonised Russia, changed the whole future history of the world. But this is by the way. That is a story to be told—later on. People are not quite ready for it yet. (It is still regarded as an incident: it is really the salient fact of all modern history). point is that we Western peoples as a whole, who in 1914 realised so little what war in the modern sense means as to believe that it could be waged and won while we carried on," business as usual", considered overselves quite entitled to sneer at the Balkan peoples, who had already proved themselves to be under no delusions whatever as to the implications of modern war.

Slowly and painfully, at prodigious cost, we are learning the lesson that they never needed to learn. There is no way out of it, short of ruin. We shall scarcely learn it in the course of the present war: it means the undoing of too many things that we never ought to have done; ever since the Reformation, and the dispossession of the finest race of yeomen the world has ever seen; it may even be that we shall never learn it. Old people do

not take to lessons kindly. But—in the coming war, the race that that is going to survive is the race that best learns it. The race that is going to survive will be that race the mass of whose population, in simplicity, directness and hardihood, most resembles the the despised Balkan peoples. We who have known them best, knew they were good; even we did not realise till then how solidly good they were—and how good any sound stock must be before eviction and the Industrial Revolution has turned it into a race of wage-earners.

Alternately bullied and betrayed by the Great Powers, despairing at last of common honesty, the Balkan League decided to stake its very existence, in defiance of prohibitions, on one bold throw for itself, basing its temerity on the paradox that while either group of the family of Powers could, if given a free hand, have wiped it out of existence, collectively that unpleasantly jealous family exactly nullified itself, and might consequently be defied with impunity. One could learn something useful even from the Turk.

At the last moment awaking to the fact that things were getting uncomfortably near to reality: "STOP!" roared the portentous bogy of international diplomacy, in a terrible voice; "Stop it, you brats!" "It is much regretted", came the courteous reply, "that the time for diplomatic intervention is past". "Foiled!" muttered the bogy, and subsided, rustling over files in a perturbed manner, in agitated search for a precedent that wasn't there. What was it they had had the audacity to say? "The time for diplomatic intervention had passed"! ........ After this, the deluge!

Orders for general mobilization were signed on the afternoon of 30th September 1912. It was like ........ no, not the touch that fires a mine, but the touch that starts a wound-up clock. To all outward appearance, Belgrade and Sofia were their normal busy, modern selves; Sofia, as usual very clean, magnificent and dull, Belgrade less self-conscious and consequently more attractive. The leaves were turning yellow in the park of Topchider under the autumn sun; no casual visitor attending the usual corso,

where the beauty of Belgrade paraded its charms for the delectation of the brave, would have suspected what a volcano was simmering just beneath the surface; and Sofia was certainly no less self-contained. No despotism could have rivalled the unity. reticence and lovalty with which the secret was kept by these democratic states of veomen, in which every citizen is a soldier, with a personal stake in the country and a soldier's patriotic code of honour. They knew that if they talked they would spoil everything that had been preparing so long. They didn't talk. As for the Greeks, the only thing that would have excited suspicion (not to say consternation) in diplomatic circles would have been if they had stopped talking. People who have trained themselves to the extent of holding their military manœuvres in the inhuman cold and mud of Balkan winters, in order to become accustomed to campaigning in adverse conditions, are not likely to "give away the show" which they have been at such pains to prepare. It means too much to them. People who have learned enough to be as thorough as that have learned enough to keep their mouths shut.

So all the world busied itself with its affairs. Then.....plan! The clock was set going.

From every direction, by every road, the sturdy peasants came pouring in. Grand, heavy-boned, tireless men, men who can stick it and go on sticking it like heroes, on a crust and an onion, who do not know what it is to be sick or sorry; born fighters to a man, and trained in modern war, in a day these nations of soldiers were in arms, and hurrying in in hundreds of thousands.

It has been my fortune to see several nations mobilising for war. The Latin makes his practical preparations, permits himself a short passionate interlude, adding sufficient time to take a call (as the actors say) and final heart-rending adieux, dramatic instinct strong to the last, and so in acute dejection to his mobilization centre, where his volatile temperament instantly re-asserts itself; the Turkish Redif regards the whole business as another old bit of Kismet, and shambles off, with the philosophic reflec-

tion that if he is going to trouble he is at any rate leaving some behind, and Allah is great, anyway; the Greek townsman declaims over a final glass about Alkibiades, and about all the prodigies of valour he is going to perform; each has his own little way of joining up, and each gets there in the end; ...... but these strapping fellows came in with a soit of joyous but suppressed elation which I have seen nowhere else; thus, perhaps, fared men to the Crusades. To fight was not regarded merely as a duty but in the highest sense as a privilege; the very air thrilled to the call of hard-trained, vigorous nations to arms. The note was, "At last!"

Indeed, the very enthusiasm of the response, by leading to congestion, threatened to dislocate the elaborately workedout plans for mobilization and concentration. These naturally allowed a reasonable time for men to get to their respective depots. But when, as happened in more than one district, a whole countryside besieges its depot on the rumour of an impending mobilization order, until the magic chit arrives and the officer in charge can begin to serve out the rifles and equipment; when men on getting their orders at nightfall after a long day's navvying, down tools and tramp all night, singing lustily, by mountain tracks to their headquarters; when local trains come puffing into market towns with the steps, the roofs, even the buffers, crowded with clamorous reservists, then "Control's" time-tables are liable to be thrown out of gear before they have a chance to get working. It becomes impossible to get the troop specials away according to scheduled time.

Civil life practically stopped dead. Banks closed, trains stopped running, cabs vanished from the streets, there was no "business as usual"; there was only one business in the world, and that was war; and not only was every man in it: every woman was in it too. They boasted that not a tear was shed when their men went away. Equally they had their work to do, and nothing else mattered. On the farms, every bit of stuff that could possibly be of use, beyond what was actually needed to keep body and soul together, they loaded

on to the family ox wagon and brought rumbling in by miles of miry ways for the use of the military authorities. All the surplus wheat and food, every horse, ox and cart that could be spared, were placed voluntarily and unconditionally at their country's disposal. Why not? It was wanted. If the men could offer their lives for the cause, were the women not to give their services and their gear? It was needed. This was war.

It is far from my intention to bestow unstinted praises on the Balkan people. Few Englishman can have had more opportunities than myself to observe their shortcomings, both from personal contact and from their neighbours' points of view. Their diplomacy, for example, is what centuries of Turkish oppression might have been expected to make it. Their sanitary arrangements in the field were deplorable. But I am not attempting an analysis of Balkan character, I merely illustrate by Balkan instances certain qualities without which engrained in its proletariat no race can hope to survive, the qualities of patriotism and training. A comprehensive trial of strength between more or less equally-matched sections of humanity (which is what modern war-or life for that matter-amounts to) must result in favour not only of the section prepared to make the greatest sacrifices,—that is to say the most completely patriotic,—but of the section able to get the best value out of such sacrifices,—in effect, the best trained.

In the latter connection, consider the question of supply and transport.

As the present war has established the necessity of getting the greatest value out of national resources, it is clear that the nation which can obtain the same results as its opponents for a smaller expenditure of its vital energy, actual or potential, is by so much to the good. Stimulating food is expensive and perishable, and a highly civilised people, whose assimilative processes have become vitiated through litelong reliance on such food, is unable to maintain its vigour and moral when supplies give out, and it is forced back on a simpler diet, which may be all that

a hardier and more frugal race requires. It is obvious that, resources being equal, a man who can remain fit and hard on sixpence a day will not only keep going for five times as long for the same money as a man who needs half a crown's worth of provender; he will not require a quarter of the transport which the other needs to keep him supplied with his victuals, nor a quarter of the subsidiary army required to work that service. The Balkan armies left no litter behind them, because they used And the gain to such a country is not merely no tinned foods. represented by the immense saving in commissariat, in Army Service, and in all the machinery required for purchase and distribution which this entails, there is an actual gain in health. Not only is a fighting man, or any physical worker, no fitter on stimulating food; he is less fit, and more prone to disease. contrary notion has no more foundation in fact than the belief that a diet of lion's heart will make a coward courageous. Stimulus begets the need of stimulants, and eventually renders them indispensable. The armies of the Balkan League showed to the world an example of endurance and valour impossible to surpass, and they took the field, and kept it for many months, on a ration of bread and water! Cheese they had when that could be obtained, and (very rarely) other things, but bread was the staple diet, and a sufficiency of bread was accounted a good Tschorbadja (people who eat meat every day ...... i. e., well-to-do people) are rare in the Balkans at the best of times.

But the bread was honest whole-meal bread, the veritable staff of life, not a pallid mackery of alum and starch. It is characteristic of the sound practical common sense of those people that neither in normal times nor in the abnormal conditions presented by war as an opportunity to the astute, does one find in their countries any trace of that form of commercial enterprise known as "graft". Specious arguments proving the superior nutritive properties of devitalised factory flour as compared with the old-fashioned product of the upper and the nether mill-stones, or pointing out (as one reasonable man to another)

the dislocation of the social system to be apprehended should daylight be used in preference to gas, would leave them cold.

Particularly is this true of the Bulgar, the most solid of the Balkan peoples, who is possessed of a dour and canny caution against which loud and loose assertion breaks like waves on granite. Even if commercial interests in the Balkan were powerful enough to stifle protest against thinly disguised fraud, the natural common-sense of its inhabitants would speedily convines the most enterprising man of business that there was nothing doing with such an indecently sceptical people.

I sincerely hope that the above will not be construed as advocacy of Vegetarianism plus total abstinence from spirituous liquors. I regret to say that I have myself by degress reached the stage at which an unmistakable desire for alcoholic beverages begins to manifest itself, and an exclusive diet of bread fails to satisfy. I merely refer to this instance of frugality as an illustration of my points that a naturally extravagant and wasteful people is a people that is not pulling its full weight, and a community whose short-sighted laws allow vested interest to batten on it unchecked is merely encouraging internal trade at the expense of its member's physical and moral fibre,—a process which makes for anything rather than ultimate national efficiency.

A few years ago a couple of little books were published by the British Medical Association, under the title of Secret Remedies, consisting of analyses of a very large number of widely advertised stand-bys which purported to cure every ill that human flesh is or imagines itself to be heir to, with the prices at which they were retailed alongside of the actual cost of production (say \frac{3}{4}d. for a half-crown bottle, or some such reasonable margin of profit). They were unkind books; they frankly aimed at undermining public faith in national institutions, and at depriving shareholders of legalised sources of income, which, legitimate and indeed laudable as such a course would have been considered had the malicious author some rival concoction to launch on the market, was in this case evidently nothing more or less than an ebullition of spiteful envy on his part, directed against the

blameless proprietors of some of our most successful business concerns. Fortunately for the owners of the valuable properties in question, the British public, though they bought the books largely, declined to be led astray by this heartless exposure, and it must have been a mortifying reflection to its vindictive and ill-conditioned writer that the shares in several of the best known remedies, which he had so callously dissected and exhibited in their naked simplicity to the public gaze, continued to rise steadily in value.

Such books would have no sale in the Balkans. People in those parts take no interest in Secret Remedies. They need neither them nor their proprietors. Nor will any race that is going to keep its head above water in the coming time.

I have referred at some length to the Balkan peoples, for the reason that they illustrate my argument that a race which intends to keep on the map in future will have to face the problem not only with the same united and patriotic determination, but with the same directed training, as they displayed. This war closes an era Now begins a New Time———an altogether more strenuous and more virile time. And a soft people, an untrained people, a people who evades facts, who applies obsolete precedent to unprecedented conditions, and who tries to carry an immense dead-weight of unproductive lumber along with it, will find the world beyond all comparison a harder place to live in than it was in the easy-going old days before it was so rudely prodded awake. It will find it an impossibly hard place.

I can already hear the objection that it is not reasonable to expect from a complex civilised state the primitive virtues proper to peasant states. My answer to that is that we shall find ourselves under the necessity of revising our idea of what constitutes a civilised state. For to continue to define it as a privileged community of employers reaping where its fathers sowed, leaves it the helpless prey of any community adopting a sterner definition.

In our modern industrial civilisation, the ideal of a hardy and patriotic race of peasant proprietors is obviously unattainable. The world has out-grown such patriarchal simplicity, and goes on to ways untried. The best that a modern state possessing that vitality which carries with it the "will to power" can do (and that it must unquestionably do) is, somehow or other, to produce a population with an ideal of universal and systematised service, both military and other, of the State, as the primary condition of citizenship (primary condition of liberty, as a matter of fact).

A modern proletariat may not be able to lead, as do the majority of the Balkan peoples, an ideally wholesome existence; it is impossible for people living mainly in 20th century cities to live any but an artificial and over-stimulated life; but universal training, following on an up-bringing purged by necessity of many of the present handicaps due to ignorance and its exploitation, will at least give its members a start in the right direction; for the rest, the obligations implied in Treitschke's conception of the State (not as the source, as the Prussian reads it, but the sum, of its members' energy) no longer admit of evasion. heartily wish they did. I confess myself entirely in favour of any social system which, while ensuring the highest degree of efficiency in the State, makes work optional for the individual, and the result of it his own affair, and can only regret that I personally lack the idealists' childlike taith in the practicability of any such delightful arrangement. The principle which there will never again be any excuse or any forgiveness for forgetting, is the law of natural selection,—that supremacy is assured by no divine right, but only so long as no rival can successfully challenge it. To the moralists this may appear to be a terrible state of affairs, and so no doubt it is; the most regrettable feature of the whole business being that there is apparently no way out of it.

So much for generalities. The problem before us lies in their application. We must know something about the conditions that are likely to confront us before we can formulate plans for meeting them. For such plans are manifestly indispensable. It is to be remembered that the offensive in the coming war (should a definite military offensive again be needed) will aim at

developing the greatest possible effect at the very outset, after preliminary penetration comparable only in thoroughness to the production of chemical change in matter. Though it is as yet impossible to predict the outcome of the present war, the final defection of Russia has made it possible to make out certain vague but startling outlines, certain regroupings of interests and spheres of influence which begin to reveal themselves, like strange mountain shapes before the dawn, with an effect of unfamiliarity quite unprecedented in our experience.

The shapes shift and change almost from hour to hour, and will continue to do so so the end, but amid all the uncertainty, one salient fact remains constant: however the war ends, to whatever extent we manage to "down" the Teutonic armies in the West, henceforth the predominant power in the whole of that mainly unexploited quarter of the habitable globe that lies between the Scheldt and Manchuria, is Germany. Whatever happens in Germany, whatever else happens, there cannot but emerge a thwarted and pertinacious people with a burning and unsatisfied need for expansion, alongside of a vast amorphous mass of humanity whose power of organised opposition to alien penetration has departed for at least a generation, probably for ever. Such concentrated energy let loose in such a field can produce but one result. Whatever happens, Germany and none other has now assured to her the congenial task of developing practically the whole of that most populous part of the earth's surface in which the only possible rule is despotism, au inexhaustible mine of men and material, in opposition to the democracies of the West. The Drang nach Osten is coming true at last, in a way undreamed of. England, the Empire, and all the world, will have to square themselves with that.

The issue is becoming plain. We can face it if we try,—jettison the lumber and try our hardest. But it means doing just that.

It means keeping and using the right men. It is essential to remember that, though human nature has not changed, one great factor of change is operative and always accelerating, and

that is inter-communication. It is the one factor which may some day make possible the Federation of the World. Despite steamship companies' lures to prospective emigrants, the realisation of this new widening of the bounds of the common man permeates but slowly a humanity essentially of its own earth earthy, but it permeates. The native clod, the intimate home earth, are the bases of kingdoms. The citizen of the world has no parish but the world. The war has shown to millions who have never before dreamed of being buried anywhere but where they were christened, that it is comparatively easy in these days to get from one part of the planet to another, and that in other parts conditions may suit them better. Every new country in the world is full of voorlopers, masterless men, men of their hands, with no particular feeling of obligation to the country that has not tried to keep them; the modern counterpart of the soldies of fortune and the pioneer; as human material, the salt of the earth. For one of these men who existed before the war, there will be a thousand now. The old countries will be wasted, or laden with the costs of war and its aftermath; men who have given up everything to fight for liberty will feel themselves entitled to the fruits of their labours, and new unburdened lands will beckon.

There is only one thing, apart from their own immediate interest, that will hold modern men, men who have grown out of the serf stage to the extent of putting two and two together and making four; and that is patriotism. Masterful dowagers may rage at the selfishness and ingratitude of the working classes, aesthetic ladies and literary gentlmen may deplore the disappearance of the happy and deferential rustic, oblivious of the fact that the working classes, not being born fools, have for some time apprehended with a quite surprising clearness that, while the world might still contrive to rub along somehow, even if deprived of the society and advice of people who do nothing but spend dividends, it would be in a state not far removed from a dilemma, without the assistance of the people who earn them. The ungrateful wretches, in spite of all that is

done for them, persist in displaying a thoroughly modern and independent spirit of unrest, which is admitted on all hands to be one of the most ominous signs of the times, and, as Samuel Pepys remarks, what will be the end of it all God knows.

Perfectly frankly and honestly, what particular reason hitherto have our operatives—our mill-hands, dock-hands, day labourers—had for being patriotic? Our Empire on which the sun never sets, our flag that waves on every sea, are nothing more to them than rhetorical figments. They can do a day's work, and get a day's pay for it, in any Empire or under any flag on the face of the earth. And what is more,—what is the unfortunate feature from the point of view of the supporters of the old regime, that on the whole appeared to work so comfortably, -they know it. This is not radicalism, it is merely recognition of plain, existing fact. And there is no more hopeful sign than the widespread recognition and acceptance of this fact, not merely by the intelligenizia, but by the aristocracy, of the race. No more hopeful sign for the race—and certainly no more hopeful sign for the aristocracy. To resist any irresistible movement is futile, but to resist an irrestible movement which is the only thing that can save the resister from ultimate destruction is not only futile, it is sheer lunacy. In face of what confronts us without, in face of the need for meeting the new situation, it would be merely asking for trouble to attempt to keep our end up any longer on the windy basis of a rhetorical figment. "They appear to fight for the figment not entirely without enthusiasm?" They do. And simply because they are determined that in future the thing it stands for shall be something better than a figment, or else nothing at all, but either way no longer a symbol of compromise. There is nothing whatever to gain, and a very great deal to lose, by supposing that our people are fighting to maintain existing conditions. They are not fighting because they think things are good enough, they are fighting because they think things are not good enough.

Our opponents frankly state their ideal to be Prussianism (that is the most convenient word), and do not care who knows

it: do we imagine that we can successfully oppose to that a system which is not what it purports to be?

We face a new situation. And we have the finest human material in the world, the most dogged, the most potentially loyal, only waiting for guidance and inspiration—and a share in what should be theirs. Let their natural leaders give them a lead, show that they mean to stand by them against people who would try to squeeze them dry, as a British officer by his men, and no race will follow more devotedly, with a grander patriotism; try to spoon-feed them on rhetoric, to patronise them, to wave flags at them, to teach them to cheer by numbers, and all the best will go. And we simply cannot afford to let them go.

By hook or by crook, cost it what it may in discard of treasured prejudice, we must keep purposeful men, must keep and use the men who know. Most of them by force of habit, and attraction to their native soil, will come back at first, but if they find, after a year or two, that they are still working, at a loss; to maintain anachronisms and not the commonwealth,—to form a modern Servile State of hirelings working for others, and not of free yeomen and free craftsmen,—the best of them will drift away. Why should they stay?

It means keeping hard. In the physiological sense, as a matter of training, this should be the easiest part of the business as far as we are concerned. But there is another kind of hardness, more psychological, and in a mechanical age even more essential. As a race we are amazingly credulous and goodnatured. "Easy-going" perhaps best describes us. A democlacy lives by catch-words, and is easily taken by vain shows. The simple charms of an alliterative phrase, an "All-Red" something-or-other, will gain such support from the multitude as the most benificent scheme would never receive on its merits.

If, after a few more months of bloody fighting, the German Kaiser, in sackcloth and ashes, were to climb the steps at the Hague on hands and knees, pausing to lick each step so painfully climbed, and were at the top to make a public confession of penitence and insolvency to an innumerable gathering of

reporters, our national elation at this public humiliation, national sentiment against hitting a man when he is down, would to a very great extent obscure the fact that the German potentiality for peaceful penetration (as a preliminary to appropriation, and a legacy to young Germany) remained practically unimpaired by the premature demise of perhaps one in a dozen of the male Teutonic population, and not a pfennig the worse for such a cunningly-planned parade of contrition. Distasteful as His Imperial Majesty would doubtless find the performance, he would be justified in considering it a small price to pay for allaying all remaining doubts as to Junkerdom's renunciation of the world-domination idea.

That there is not the slightest prospect of any such graceful act of contrition, either sincere or otherwise, is beside the point. The eye-wash will not be applied in such a sensational form, but it will unquestionably be applied, and that in a far more subtle way—possibly even by a sudden German concession of most, if not all, of what the tired nations of the West are still doggedly striving for, dressed in whatever guise can make such concession most redound to Germany's credit, and ensure in return the removal of our one trump cardembargo on the supply of raw material. It is the worst danger arising from the Russian situation, and I for one shall be surprised to see any democracy avoid the trap. satisfied now with what would have satisfied us had Russia not collapsed, it will be well worth Germany's while to compound on those terms. Germany can well afford to grant them—playing magnanimity for all each item is worth.

Have our democracies perception enough, determination enough, check enough on expostulatory pacifists, check enough on the great mass of citizens without imagination, positively incapable of perceiving that old standards have ceased to exist, to realise the altered position, and avoid the snate, and go on? Northern France restored,—Belgium—Italy—even the Trentino ceded:—and, as a final, overwhelming concession, to prove to the world Germany's disinterestedness and nobility,—even

Alsace-Lorraine! Shrieks of "Victory!" from every democracy in the world! "All we have fought for,—all we were determined to win:—Victory!—Te deum Laudamus!"—What are these skittles now to Germany?—to Germany behind the Rhine, looking eastward across the steppe, calculating.—

The actual form of the trick is beside the point; whether it will be designed to catch the illiterate mass of the population or a higher stratum, will depend on which section the Policy Division of the Grosser Generalstab may consider the determining factor (and, apropos of that, it is really time that we abandoned our entirely groundless popular conception of the Prussian as an egregious, clumsy, sausage-eating—this a particularly ludicrous trait—beer-swilling bungler, invariably missing the finer nuances, amid howls of derisive mirth, like poor. stupid old Pantaloon, no match for the Clown,—and substituted something truer to life. Punch has much to answer for in respect of such British misconceptions and their consequences. witness the Balkan instance already referred to:-but this approaches the highly psychological domain of propaganda, on which I hope to write on a later occasion;) the principle holds good; a wage-earning democracy is caught by shows as an autocracy is not, for the simple reason autocracy thinks with the brains of a small number of hard-headed people who do not believe advertisements, while a democracy thinks with the brains of a large number of soft-headed people who do.

It means taking the long view. Here, once more, and for similar reasons, the autocratic government scores all along the line. A democracy mainly composed of wage-earners demands immediate results. We cannot expect his elings or their elected representatives to take long views, any more then we can expect a tenant to put his money into the land. For that, a man must have a stake more than sentimental in the issue. Modern men are neither raiyats nor children, to be put off with baubles and flag-waving. They will go, to where they can live as men. It is the only known specific for narrowness of outlook. Show me a country where the mass of the population works for hire

and not as fellow craftsmen, where Master means a master of men and not a master in his craft, and I will show you a country where patriotism may be a sustained tradition, but will never be the living force it is where the yeoman tills his own land and the lad is entered apprentice to his trade. The people of such a country must either submit to be drilled into Prussian automata, or they will go where men can breathe free air.

Against the admitted and, from a military point of view, very grave defects of Western democratic institutions, we pin our faith to one asset which, rightly applied, outweighs them all; that of individual self-reliance. Nearly twenty years of travel among divers races of men, leaves me with an unimpaired conviction that a Briton fending for himself still possesses such qualities of independence of character, resource and resolution as, welded to a common end instead of dissipated broodcast, would sweep the earth.

The old order is dead—not in abeyance, but dead; and only the constant things remain; the world starts afresh after this. There will be no going back to the old ways; the old charms won't work any more.

What new system will hold together a people to whom the whole world is open, keep it hard in mind and body, and make it take the long view above petty immediacies? What but a modernised version (based, perhaps, on a combination of the co-operative movement with the Whitley Committee scheme which has already been adopted in principle by the British War Cabinet) of the old spontaneous system which was looted as were the common lands, and has never been restored?

We stand at the parting of the ways. One is the damnable Prussian way, which leads to the Servile State, Junkerdom and the regimentation of the poor; the other is the old, cooperative British way, the way of the future, of a nation of yeomen and craftsmen's Guilds, freed of bosses and parasites and exploiters of men.

We could not take the former if we would. Our People are not Germans; also, their eyes are opened; they would not stay.

From now onwards, only factory-fodder would stay for that. Have we forgotten More's remark about "sheep eating men"? The men have not.

And we cannot stop midway.

(That is the point to bear in mind. There can be no more standing betwixt and between, and balancing opposing interests. Is it a matter for regret? Live nations are not static. Steam is a beneficent agent—unless one sits, a la Russe, on the safety-valve. Nevertheless this is where our chief danger lies. If we try to play the time-honoured game of evasion of the main issue, a little concession here, a small compromise there, and all as broad and constructive as a patched-up cock-loft,—under the delusion that sort of thing is going to induce men to stay on a weekly wage, when a free man's life is being offered to them from a dozen competing quarters, we shall awake to find the Village Idiot still faithful to the Village Pump, and remarkably little else. It positively will not do.)

There remains one road, the only one for a healthy modern state; the only means of keeping what we have, and keeping it strong and sound. That is the road—the road back to the common-which, without haste-emphatically without haste -but without rest, we have to follow. there any way out of it? And, after the last three years, do we want any way out of it? Would I have given up Participation in the subtle game of Austro-Balkan diplomacy in order to add one more voice to the testimony of those who come back with tidings from the enemy's camp, and because my own people might need such experience as I had to give them, would I have left the most absorbing game in the world, if it had not been abundantly clear that failure to accept such testimony means no less than the enthralment of mankind? as failure to accept such testimony has already meant the loss of the Danube line, with all that will imply to our remotest descendants. We are approaching the supreme issue between absolutism and freedom, and a race of hired men, however good, will never see it through.

# Some Baikan Reminiscences.

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To hold what we have, to use the best we have, is all that matters. This is the only means by which we can do it. And we must do it. Because the Servile State still hopes for the mastery of the world, and we stand for a world of free men.

### LECTURE ON ARTILLERY.

RV

CAPTAIN W. H. ADDIS, R. F. A.

An Artillery lecture must of necessity seem technical to those, who are not in direct touch with Artillery work; but if these technicalities are explained as they occur, then I think a good cause is served, for when the success of an operation depends on the close co-operation of two arms, the more each knows of the other's work the better.

Nature of Guns and their Capabilities.—The Artillery can be divided into two classes.—Heavy and light. The heavy class consists of guns and howitzers, having calibres ranging from 15", which fire a shell weighing approximately 1400 lbs, to the 6", firing a shell of 100 lbs. Previous to this war the heavy artillery had no definite task; it was a special arm held in reserve for special tasks. Now that is changed and the primary duty of this branch of Artillery is to obtain superiority over the hostile artillery; in other words their primary task is Counter Battery work. This task, counter battery work, is given principally to the heavy class of Artillery, because the introduction of Gun shields, and the fact that the guns are placed some 400 yards or 500 yards behind a crest in well prepared gun pits, render it practically impossible for light guns, firing other than high explosive, to silence or neutralize the enemy's artillery. It is co-operation with Aircraft which has enabled our heavy guns to meet with so much success in this direction. When the ascendency has been obtained, it becomes the duty of the artillery to assist the movements of its own infantry, by turning the fire on to the hostile infantry.

The Light Artillery consists of Guns and Howitzers ranging from the 60 pounder to the 2.75, the latter being a mountain gun. Included is the 18 pounder Q. F. Field Gun, which has proved itself to be the best shrapnel gun in the war. The capabilities of some of our field guns and howitzers

are interesting and also instructive, since] they show the high state of efficiency which has been obtained. The 4.5. howitzer which fires a 35 lb shell is capable of firing 8 to 10 aimed rounds per minute; the 15 pounder B. L. C. the same number; but the weight of the shell is only 12½ lbs. The 18 pounder Q. F. can fire 20 aimed rounds per minute for some considerable time with a trained detachment, and when one realizes that this is done from behind cover, (i.e. the target can not be seen) it means that a very high standard has been obtained. This gun fires a shell weighing 18½ lbs, and containing 375 bullets.

The average time for a Field Battery of 6 guns from "Action to 1st gun" (from the time the gun drops into action to the 1st gun fired) is about 30 seconds. The record for Horse Artillery is 8 seconds a performance put up by "Q" Battery on Salisbury Plain in 1912, and which to my knowledge has never been equalled, though "J" Battery did 11 seconds in the same year.

Pointing out Targets or Objectives .- Whenever Infantry have occasion to ask Artillery to engage certain targets, careful description of the locality of such targets should be given to the Brigade or Battery Commander or forward Observation Officer. If squared maps are not available, a rough sketch of the part of the map where the objective is should be made, with a remark for its exact locality. With squared maps it is comparatively easy, but all officers should practise the system as often as possible. Some people find the greatest difficulty in locating exactly their own position, not to mention an object several hundred yards away. The system of indicating objects by a squared map should be thoroughly understood by all Infantry and Artillery officers. No doubt all officers are fairly skilful at doing this but for those who are shaky no opportunity should be missed for practice, or a S.O.S. call could never be properly responded to by the Artillery. The Artillery methods of pointing out objectives should also be known and understood by Infantry officers. Generally speaking all Artillery officers know the actual measurement of their hand in degrees and can measure fairly accurately from one degree up to 20 degrees, and this method is always used by the Artillery, an example being:—

Reference point cottage—Infantry entrenched 5 o'clock 15 degrees In a case like this giving so many fingers would be out of the question.

Difficulties Experienced by Royal Artillery in close Shooting in the Field.—The difficulties experienced by the Artillety in close shooting in the field should be known and the steps taken to obviate the chance of hitting our own Infantry in the back, then the latter will be inclined to be more generous in their feelings should it happen to them, knowing that all precautions have been taken to prevent this happening. The trench warfare the Army is now engaged in very frequently necessitates the bombardment of an objective situated only a short distance from the line of trenches occupied by our own infantry. The problem arises therefore as to whether it is safe after ranging has been completed with due precaution, to continue fire on the objective, without clearing our trenches. The ques-. tion of accuracy of fire has, therefore, become a matter of importance to a degree never contemplated in Field warfare or provided for.

Calibration. To obtain this accuracy the first essential is "Calibration of guns". The term implies the process by which the muzzle velocities of guns can be calculated from data obtained by actual shooting. This will be understood better if I draw attention to what is frequently done on a Rifle range. It often happens that shooting, say at 200 yards, elevation varying from 200 yards to 400 yards has to be put on the rifle to hit the target, thus bringing all the rifles into line. The same thing applies to our guns except that the procedure is:—

- (a) A point is selected at a distance of about the average range of the guns i.e. 3000 yards, its position being accurately known on the map.
- (b) Choose a day on which the wind is steady.

(c) Fire a series of at least 5 rounds from each gun on the target.

The difference in shooting of each gun is noted and accounted for by raising the elevation to the value of error. So that all guns shoot up to the range. Once the guns are calibrated, they need not be done again, unless they have to fire so much that the wear will cause them to lose their muzzle velocities.

Effect of Temperature. Owing to variables a gun range often differs trom a measured map range. To explain this I will give an example.

```
The range measured on the map is ... 3000 yards.

Temperature of air ... ... 75 degrees F.

Barometer pressure ... ... 29 feet.

Wind (a following one) ... ... 30 feet seconds.
```

Now a high temperature raises the temperature of the charge which in turn adds to the Muzzle velocity and gives a longer range. The low reading of Barometer also assists, as the head pressure on the shell is less. Following wind naturally assists a shell in flight, so for the foregoing variables, we have to allow sufficient corrections in range to counteract their influence. In this case the following correction will be made.

```
      Temperature
      75 degs F.
      ... minus 24 yds.

      Barometer
      29"
      ... ,, 27 yds.

      Wind 30. f.s. (following)
      ... ,, 50 yds.
```

Total gun correction. 101 yards.

Thus the gun range would be 3000 yds. minus 101 yds. 2900 (approx). The correction can of course be reversed when it happens that the temperature is low, the barometer high, and the wind against:—

```
EXAMPLE Map Range 3000 yds.

Temperature 60 deg's F. Gun Corrn. Nil.

Barometer 31.5",,,, plus 40 yds.

Wind (against) 30 f.s.,,,,,, 50,,
```

Total Gun correction

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90 vds.

making the range on the guns 3000 plus 90 yards = 3090 yards. From these two examples it will be seen that under quite ordinary circumstances a map range of 3000 yards may require any gun range between 2900 yards and 3090 yards.

I should like to point out that, as the atmospheric conditions alter, so do the corrections, and may vary from hour to hour, so that to deal with them a barometer and thermometer have become part of a gunner's equipment.

In addition to the variables we have to contend with error of gun and error of fuze. The former at a range of 2000 yards has a zone error which is 88 yards in length. This zone error varies according to the range and at 3000 yards it is 124 yards. This means that if two guns are firing, with 3000 yards true range, one round may fall 62 yards beyond and the other 62 yards short of the mean point of impact. The error of fuze is one in burning and at 2000 yards is equal to 81 yards, 50% zone error. This means that a 100% zone error of nearly 330 yards may occur at this range, this being the greater error. It includes the error of gun, so that Infantry 165 yards behind the mean point of impact are quite safe. I should like to emphasise that this does not occur often but one shell out of a thousand may burst at the lower end of its error zone.

There are three ways of overcoming this difficulty, the first being the evacuation of the trench by our own troops during bombardment, but this is not always practical. The second, the establishment of a mean point of impact, sufficiently far forward to ensure our own troops being outside the 100% zone of error. This means that we should lose the effect of our shrapuel enormously. The third, and undoubtedly the ideal alternative, is so to place the guns that they will enfilled the objective.

Co-operation with Infantry.—It has become necessary for guns to be placed well back behind a crest, and this involves the use of extended communication. An observation post is chosen anywhere from 500 yards to 400 yards in front of the guns and an officer and party sent forward. The officer occupies this post

for the purpose of accurate observation of fire and is a direct means of communication between the Infantry and the guns behind them. F. O. O.s (Forward Observation Officers) may have to establish themselves near or in an Infantry position actually in the trenches or even in front of them, if, as is frequently the case, they are situated rather behind a crest with a consequently restricted field of view and fire; but invisible to the enemy's Artillery. It is extremely difficult to find such an Observing Station however, and the Forward Observation Officer's place is nearly always in the Infantry trench. He is generally certain of a cordial reception from the Infantry, and if the Officer commanding the Company is in telephonic communication with his Battalion Commander a very happy arrangement ensues. During the Battle of the Somme the following co-operation with the Infantry took place.

- (a) Officers Commanding Batteries during ordinary trench warfare visited Battalion headquarters and Company Headquarters in the trenches, once every two days.
- (b) Forward Observation Officer visited Company Commander and Sniping Officer every day.
- (c) Forward Observation Officer was always with Battalion headquarters after dark (usually remained from 5. p.m. to 7-a.m. on the following day).
- (d) Batteries were in telephonic communication with Company and Battalion headquarters both from O. P. (observation post) and position of guns.
- (e) Infantry officers whenever possible were invited to study the ground from Artillery O.P.

Liaison Officers — During an advance a Liaison Officer is provided by the R. A. to the Infantry Brigadiers. The Liaison Officer with the Infantry Brigadier remains at Infantry head-quarters and is in direct communication with the R.A. Brigadier of the Division.

The duties of an Observation Officer are:

(1) To ensure that a constant watch is kept over the area allotted to the Battery.

- (2) To observe and correct fire.
- (3) To maintain constant communication day and night with Battalion headquarters and the Battery.

Generally speaking all S. O. S. messages and calls for retaliation from the Infantry • the Battery in support should come through the Forward Observation Officer.

The usual procedure for the Forward Observation Officer on arrival at his dug-out is that he will at once report himself to the Battalion headquarters and will then see the Adjutant or Infantry Commander with a view to a thorough mutual understanding on the following points:—

- (a) The exact area covered by the Battery and the nomenclature of trenches and how this retaliation will be carried out by day and night.
- (b) The position of the Forward Observation Officer by day and night and the means by which Infantry will communicate with the Forward Observation Officer.
  - (c) An interchange of panorama sketches.
- (d) Information as to whether the enemy's first linetrenches are held strongly by day or night.

It is most necessary that the Forward Observation Officer should get to know the Infantry company commanders, and should take every opportunity of hearing their views of the attack and defence of the Section. All movements of the enemy should be reported to the Infantry headquarters by the Forward Observation Officer and he should make all arrangements for opening fire before the request is made by the infantry for attillery support.

Registering.—Before proceeding to the work "Artillery in Trench Warfare" I should like to explain the system of registering and wirecutting. The former is most important because it enables the Artillery to turn their fire on to any of the registered points at a moments notice. The procedure is:—

Parallel lines of fire are obtained by actual shooting, and when found parallel, the line of each gun is registered as "Zero Line" and all subsequent switches are measured with reference

to this line. Registration of any point in the zone can now be proceeded with; the term registration implies ranging on various objects with a view to being able on some future occasion to open an immediate and effective fire on these objects. The record of this registration should contain the following:—

- (a) Range to objective.
- (b) Lateral angle to "Zero Line"
- (c) Effective fuze.

The main business of registration is to ensure a full knowledge of the ground, and this can seldom be obtained without the expenditure of a certain amount of Ammunition, the indentification of various localities and buildings shown on the map being almost impossible without shooting at them.

The following is an example of a Gun register, a copy of which is kept at the Observing Station;—Copies of Gun registers should also be given to the Infantry Commander who should distribute further copies to as many Company and platoon commanders as possible.

# Gun Register.

......Battery Royal Field Artillery.

Registered Zero Line. 98 Rt. from Cairn.

All ranges corrected to temperature 60 Barometer 30, Corrector for fuze 148.

Target.	Angle from Zero line.	Angle of Sight.	Range.	Remarks.
"A" Cross Roads	7 degs 30' Lt.	30' elevation.	2875 yds.	C. 13-d. 24.
"B" Redoubt.	9 degs left.	15' elevation.	3050 yds.	C. 14-a. 5-4.
"C" O. P	4 degs Right.	20' elevation.	1975 yds.	E. 6-c 3-9.

Wire Cutting.—There are general principles laid down for cutting wire, and the Artillery generally acts in conformity to them. The field Gun which has proved itself to be the best for wire cutting is the 18 pounder Q. F. though 60 pounder firing

shrapnel can also be employed. H. E. (High explosive) is useful when the wire is supported on iron standards in conjunction with 18 pounder shrapnel, to scatter the posts and wire when cut. H. E. has not the cutting effect of shrapnel, it being liable to coil up the wire instead of cutting it, and the craters of the heavy shell are in themselves a serious obstacle to our Infantry.

The most effective ranges are between 1800 yards and 2500 yards, and 3500 yards may be taken as the maximum range at which wire may be cut, as beyond this range, even with the shell burst close up, the remaining velocity of the bullets is not sufficient to cut the wire, unless the depth of the wire is great. It is best to cut it with one gun as the control is more easy. It may be advisable to commence with all guns and to select the one which most quickly settles down to steady shooting.

The observer should be well up to the wire and, if possible, on the same level. When possible frontal fire should be used, but, if Oblique or Enfilade fire is unavoidable, then double observation is advisable. Wire should be ranged on most carefully with percussion shell, as it will probably be in the vicinity of our own trenches. It may be necessary to commence by over estimating the range, and then creep back. In finding the fuze, the same procedure should be adopted. The ideal height and position of burst is 4 feet up and actually in the wire. One such round will do more good than ten others just short; a round 5 yards short of the wire may be quite in-effective. A clear line must be cut before the line of fire is altered and this line is gradually widened till all the wire is cut.

Artillery in Trench Warfare.—Broadly the Artillery Scheme consists of—

- (a) Bombardment.
- (b) Covering fire for assault.

Definite tasks are allotted and zones, to be dealt with, pointed out to each Brigade and Battery, such as the following.

- (1) Cut Wire.
- (2) Search Communication trenches and approaches.
- (3) Intense bombardment at stated times.

During the assault the role of Field Guns would be .-

- (1) Barraging to isolate the attack.
- (2) Dealing with counter attacks.
- (3) Bombarding the trenches up to and immediately before the assault. A special feature would be made of the destruction by Head Engineer of Machine Gun Emplacements, Artillery O. Ps. Strong points etc; ammunition is allotted for all those tasks, and, to enable times to be kept, all preparations (setting fuzes etc.) are made, that can be.

The Artillery prepares the way for assault by battering the defences and destroying them. The Infantry can assist considerably by continually reporting information gained about the enemy's lines, and by observing the effect of Artillery fire, mainly, as to whether strong points, Machine Gun emplacements etc. are being suitably dealt with, and the success or otherwise of the wire-cutting.

When the assault has been launched the duty of the Artillery is.—

- (a) To keep down the fire of hostile artillery; this is done by counter batteries.
- (b) To prevent the enemy bringing up supports and reserves by keeping a steady fire on communication trenches, other lines of approach, and places in rear where troops might collect for a counter attack.
- (r) To give a continuous support to the Infantry during their advances and to deal with obstacles or points, which may be holding them (Infantry) up.

The difficulties of the latter task are almost entirely those of observation and inter-communication, smoke, dust etc. preventing one seeing where the Infantry have got to, or what is holding them up. To obtain time by information from our advanced troops depends upon the efficiency of our counter battery work, as, if the Enemy's guns are not silenced, they will form a barrage behind our attacking troops, and make the sending back of information very uncertain. Each

Battery would have O. O. forward, whose duty it would be to keep in touch with the Infantry commander whom the Battery is supporting and to keep his own Battery Commanders informed as to the exact position of the Infantry. In selecting his position, he should remember it is his duty to assist his Battery Commander and not to join in the fight. He must keep the Battalion Commander informed of his whereabouts. It is then the duty of the Infantry to let him know their requirements. Their reports being clear and intelligible.

In closing I should like to emphasise the necessity of Infantry acquainting the O. O. of all that is happening at all times and this information should be correct and not haphazard. If the Infantry send out a working party, let the O. O. know, or he might drop a few shells into them, thinking they were a enemy party. The most (apparently) trifling happenings are always worth reporting; one does not do it because one thinks "Oh someone will send a report along". I have been asked what is the best protection against Artillery Fire when in the open, and the only advice I can give is to keep moving.

#### BIOGRAPHICAL SKETCHES.

 $\mathbf{R}\mathbf{v}$ 

COLONEL R. G. BURTON, INDIAN ARMY.

Goughs have been famous in war for more than a hundred years, the subject of this memoir having served in the Peninsula War at Talavera, Barossa, and Vitoria. He was commended for his gallantry at Talavera, and at Barossa he commanded his Regiment, the 87th Foot, being then a Major and 37 years of age. In these sketches, however, it is not proposed to deal with events outside India and adjacent territories. The career of Hugh Gough in the Peninsula and later in China, where he commanded the forces in the War of 1841-3, does not, therefore, come within the scope of this narrative. On the conclusion of the China War, Sir Hugh Gough, a veteran of 48 years' service, came to India as Commander-in-Chief.

He was in the same year engaged in the Gwalior Campaign, when a military rising of the troops of the Maharaja Sindhia was suppressed in the defeat of the Mahratta armies at Maharajpur and Panuiar. This campaign does not, however, present any features of military interest. When Sir Hugh Gough came to India, English power in the Peninsula had been consolidated in a series of wars, terminating with the defeat of the Mahrattas in 1817-18. Sind had been conquered and annexed by Sir Charles Napier in 1842; and the extension of English power had brought us into contact with the most formidable race with which we had hitherto had to contend in the East.

The Sikhs were the ruling power in the Punjab. Five thousand of this warlike race had fought against us in the Mahratta War of 1803; and when Holkar was pursued across the Indus by General Lake in 1805, he took refuge with the Sikhs. The Government were not, therefore, ignorant of the characteristics of these people.

The Sikhs came into existence only some 400 years ago. In the early part of the sixteenth Century Baba Nanak, a peasant from a village near Lahore, founded the religious sect which was to

play so important a part in the history of India. He preached pure monothiesm, a religion that was in its original form in no He rejected, for a single deity, the myriad gods of the Hindu mythology. The first two Gurus, or leaders of the sect—Baba Nanak and Angad—made little progress and had few adherents; but gradually the new faith, founded on the Unity of God and the religious equality of man, made great headway, the philanthropy and tolerance of its tenets appealing to the hearts of men. Anged, who died in 1552, was succeeded by Amar Dass, a Kshatriya, to whom the great Emperor Akbar himself listened. Under his influence the disciples or "Sikhs" grew in numbers. His successor Ram Dass obtained from the Mughal Emperor a grant of land now occupied by the Golden Temple, at Amritsat the holy of holies of the Sikhs. Here he dug a tank and began the building of the temple. His son Arjan completed the temple, increased the number of his adherents, and lived in great wealth and magnificence, thus exciting the jealousy of the Mughals, whose dominion extended to the Indus. Sikhs were now found in every province and city of the Punjab; a regular system of Government was instituted, and the sect assumed political significance.

· All history proves that faith is by persecution transformed into a militant political force. So it was with Sikhism. was thrown into prison and there died; his son and successor, Har Gobind, determined on vengeance, became a military as well as a spiritual leader. A born leader of men, Hai Gobind unsheathed the sword, organised a military following, became embroiled with the Mughal Government, and when he died after many vicissitudes in 1645 he left the Sikhs a military power. His sword was taken up by Govind who introduced the ceremony of the Pahul, the initiation into Sikhism, invested all Sikhs with the title of "Singh or "Lion," enjoining that they should bathe in the sacred pool at Amritsar and keep their hair unshorn. Their energies were to be given to the profession of arms and merit was to be gained in war alone. Govind was driven from the Punjab early in the eighteenth century, but on the death of

Aurangzeb he was summoned by Bahadur Shah and entered the Imperial service. In 1708 he was killed at Nauder on the Godavery by a pathan whose father he had slain. To this day the Sikhs perform pilgrimages to the place where this greatest of the successors of Nanak died, where there is a colony of Khalsa [the saved or liberated], and where they have erected a temple second only in sanctity to the Golden Temple at Amritsar.

There followed many vicissitudes. There were feuds with the Muhammadans who desectated their temples in return for which the Sikhs, gaining the upper hand, demolished the mosques and made their prisoners in chains wash the foundations of of the buildings with the blood of hogs. As in the case of other sects and faiths whose vicissitudes are recorded in the history of the world, religious persecution gave to Sikhism that vivifying impulse which was necessary to permanence and progress. One Guru, a prisoner of the Mughal at Delhi, accused of overlooking the Emperor's harem, said he was looking towards the West from whence he saw, with prophetic vision, a great white race coming to overthrow the Empire of his oppressors.

At the end of two centuries the Sikh faith had become established as a prevailing sentiment and guiding principle to work its way in the world. Nanak placed his little society of worshippers on a broad basis of religious and moral purity; Amar Das preserved the infant community from declining into a sect of ascetics; Arjan gave his increased followers a written rule of conduct and a civil organization; Har Govind added the use of arms and military system; and Govind Singh bestowed upon them a distinct political existence. Sikhism arose where fallen and corrupt Brahminical doctrines were most strongly acted upon by the vital and spreading Muhammadan belief.

By 1785 the Sikhs were predominant from the frontiers of Oudh to the Indus, having their capital at Lahore. The warlike character of this great people was sustained by their struggles first with the Mughais and then with the Afghan. Under Ranjit Singh, the Lion of the Punjab and one of the greatest figures of history, who was invested with royal power at Lahore

in 1798, they attained their zenith. A regular Army was organised, equipped, disciplined and trained like those of the other native powers of India, under European officers. The Sikhs had thus become the most formidable native power in India when Ranjit Singh died in 1838. He had consolidated a kingdom and wrested the province of Peshawar from the Afghaus; he had armed and disciplined a hundred thousand men and raised a numerous artillery; and he had in his wisdom kept peace with the English when many of his followers, dreading the power that was now upon their frontiers, and that had, like Aaron's rod, swallowed up the small States of India, would have opposed their powerful neighbours by force of arms.

The death of Ranjit Singh was the signal for internal dissensions. A mutinous spirit arose in the Army which in course of time rendered the troops the principal power in the It is unnecessary to relate at length the immediate causes which led up to the conflict with the Sikhs in which the subject of this memoir was to play a leading part. state of anarchy characterised by savage and bloody crimes supervened when the strong hand of Ranjit Singh was removed The soldiers of the Khalsa had witnessed from by death. afar the disaster of the retreat from Kabul. It is true that they had seen also the advance of the victorious army, and the triumph of its return, which was celebrated with barbaric pageantry at Peshawar. But the English Army had lost the legend of invincibility gained during a hundred years of victory in Peninsula India and Hindustan. The Sikhs viewed with dismay and prepared to oppose with force the advance of their powerful neighbours to the banks of the Sutlej.

Already in 1842 English outposts had been established on the left bank of the river. Ferozepore and Ludhiana were occupied and a Reserve was posted at Umbala with supporting troops at Meerut. Although the Sikhs had for some time assumed a menacing attitude, it was not until December 1845 that the Governor-General, Sir Henry Hardinge, gave the Commander-in-Chief directions to move forward to the relief of

Ferozepore, which was threatened by a large Sikh army which had crossed the Sutlej and encamped at Ferozeshahr 10 miles off on the left bank of the river. This army of 100,000 men and 100 guns under Sirdar Tej Singh and Lal Singh took up an entrenched position, and fortunately refrained from attacking the garrison of Ferozepore, which consisted of only one Division under Sir John Littler.

The British Army under Sir Hugh Gough, consisting of two Divisions, arrived at Mudki after a long march soon after noon on the 18th December 1845. It was accompanied by the Governor-General, a veteran soldier who had fought under Wellington in the Peninsula and at Waterloo. had pushed forward towards Mudki a strong detachment from their entrenched camp at Ferozeshahr, and soon after the arrival of Sir Hugh Gough in camp information was sent in that the enemy were advancing to the attack. The cavalry and horse artillery were at once pushed to the front, followed by the infantry which was formed under cover of the guns. country was flat, covered with low and in some places thick jungle, with occasional large acacia trees into which the Sikh sharpshooters climbed and inflicted heavy loss on the advancing troops. An inconclusive battle ensued, darkness coming on before a decision was reached. The British casualties numbered nearly 900; the enemy, whose losses were not ascertained, retired at dusk to their camp at Ferozeshahr. The British infantry took seventeen guns.

On the 21st the army moved out in the direction of the Sikh position at Ferozeshahr, with Sir Henry Hardinge, the Governor-General, who had volunteered his services, as Second-in-Command. This was not a satisfactory arrangement. The British army marched before dawn, and a junction was to have been effected with Sir John Littler's Division from Ferozepore. But Littler did not march until eight o'clock, and when the army found itself in the presence of the enemy, Sir Hugh Gough wished to attack at once, without waiting for

the Ferozepore Division, and so avoid loss of daylight, an important matter on this, the shortest day of the year. But Sir Henry Hardinge intervened in his capacity of Governor-General, and decided that there should be no attack until the junction with Sir John Littler was effected.

Littler arrived at 1-30, but, there was further delay, and the attack did not begin until 4 o,clock, when barely two hours of daylight remained. In this place it is not proposed to attempt to dissipate the clouds of controversy which have gathered about the events of this battle, but rather to bring into relief the fiery and impetuous character of Gough. Harry Smith, who commanded a Division in the battle, states in his autobiography that "none of the Divisional Generals were made the least aware of how or what or where they were to attack. The army was one unwieldy battalion under one commanding officer who had not been granted the power of ubiquity." On the other hand the biographer of Lord Gough makes the distinct statement that the Commander-in-Chief called a conference of his Divisional and Brigade Commanders on the evening of the 20th December, and explained to them his plans for the following day.

During the hours of daylight an indecisive action was fought. The Sikhs resisted bravely, repulsed Littler's Division, and held out for some time in the village of Ferozeshahr. But their intrenchments were taken, and Sir Harry Smith captured the village. Night had, however, fallen. Sir Harry Smith's Division was isolated, and he was obliged to evacuate Troops were scattered and the army had lost all the village. The native battalions were much shaken, but the British regiments, animated by the courageous and invincible spirit of their commander, maintained their moral and discipline. At dawn the attack was renewed, the Army being drawn up in line with the Commander-in-Chief at the head of the right wing and Sir Henry Hardinge leading the left. The advance of the English troops was irresistible. The Sikhs fought bravely, but the village of Ferozeshahr was re-captured, the

enemy's encampment taken, and they drew off their forces and abandoned the field to the victors. The victory was costly, and perhaps the losses would have been lighter had more methodical tactics been adopted. But victory was due to the determination of the Commander to succeed at all costs and to the fine spirit displayed by the English troops.

After their defeat at Ferozeshahr the Sikhs retired across the Sutlei, and gathered fresh courage owing to the inaction of the British. Sir Hugh Gough was in no position to move until reinforced with fresh troops, guns, and ammunition. enemy recrossed the Sutlei, threw a bridge over the river at Sobraon, where they constructed bridgeheads, and further up the river threatened the garrison of Ludhiana. To deal with the enemy about the latter place, Sir Harry Smith was detached with a considerable force on the 19th January 1846, and ten days later he defeated the Sikhs with great slaughter in a skilfully fought battle at Aliwal. It was not until the 10th February that the Commander-in-Chief felt himself strong enough to attack the position at Sobraon. The Sikh position consisted of a strongly intrenched line manned by 20,000 men with 70 guns, to which the British general opposed about 16,000 men and the same strength of artillery.

On the morning of the 10th February a heavy mist hung over the plain and river, delaying the opening of the artillery action, but the rising sun rapidly dispelled the mist, when a magnificent picture presented itself. The batteries of artillery were seen ready to open fire, and the plain was covered with the British troops, with the fortified village of Rodawalla on the left rear strongly held by infantry. The enemy appeared suddenly to realise their danger; their bugles sounded the alarm, their drums beat to arms, and in a few minutes they manned their batteries and opened fire on their assailants. As soon as the mist cleared a British battery near Little Sobraon opened fire, but it was half past six before the whole of the artillery fire was developed. But the guns were unable to silence the fire of the enemy's artillery, which was protected by well constructed batteries, and

a shortage of ammunition being reported to the Commander-in-Chief, he exclaimed. "Thank God, then I'll be at them with the bayonet!" The infantry was moved to the attack, and two Brigades entered the intrenchments, but held their own with difficulty, the Sikh soldiers fighting with desperation. advanced Brigades were reinforced, and the final blow was given by two Divisions which were enabled to enter the intrenchments with little loss, owing to a timely charge of the cavalry under Sir Joseph Thackwell, who led his men over the parapet and cut down the gunners at their guns. The Sikhs did not run, but fought to the last with their swords until they were slowly and with heavy loss driven back into the river, and precipitated in masses over the bank and over the bridge. In their efforts to reach the other bank of the stream they suffered terribly from the fire of the horse artillery. Sir Hugh Gough wrote in his despetch: -- "Hundreds fell under this cannonade; hundreds and hundreds were drowned in attempting the perilous passage". He especially noticed the bravery of the Sirmur and Nasiri battalions of Gurkhas who, "of small stature but indomitable spirit, vied in ardent courage in the charge with the grenadiers of our own nation, and, armed with the short weapon of their mountains, were the terror of the Sikhs throughout this great combat." The Sikh loss in this battle was estimated at 10,000 men, while the British had 2,400 casualties.

The heavy losses in the battle of the Sutlej in comparison with those generally suffered in Indian warfare led to an outcry against Sir Hugh Gough in the home newspapers and by the public. Account was not taken of the nature of the enemy to whom our troops were opposed, and who differed so greatly in courage and military attributes compared with, for instance, those to whom Clive had been opposed at Plassey. At any rate the Commander-in-Chief had in sixty days reduced the Sikha to submission and for the time being had broken their power.

The day after the battle the Sikh leaders agreed to terms dictated by the English Government, which included the surrender of the territory between the Beas and the Sutlej.

Although the Sikh Army had been decisively beaten and the Sikh nation subdued, the spirit of the Khalsa was by no means broken. The battles had taken place in what was to all intents British territory; The capital of the Punjab had been occupied, but not an English soldier had been seen beyond the Ravi, and large bodies of undefeated Sikh troops which had not taken part in the campaign were quartered in other parts of the Punjab—in Peshawar, in Derajat, and at Multan. At Lahore the the boy Maharaja Dhaiip Singh was installed under a Council of Regency, controlled by a British Agent, Major Henry Lawrence. But intrigue was rife and the extensive reductions of the Army, undertaken by the Governor-General from motives of economy and contrary to the a lvice of the Commander-in-Chief, appear to have been unwise and premature.

Although there were intrigues at Lahore, while the Khalsa retained their pride of race and nourished the hope of regaining their last power; the Second Sikh War did not arise from any of these causes but from a disturbance at Multan originating with the Musalman Governor of that place. In this disturbance two British officers, Mr. Vans Agnew and Lieutenant Anderson, were killed, and the Musalman Governor Mulraj declared himself against the British and prepared to defend Multan. Multai was joined by disaffected Sikh forces, and their defection was eventually followed by a general rising of the Sikhs. This is no place to follow either the events of the rising or of the siege of Multan by British troops. But one incident of the rising deserves to be recorded. There was in the Sikh service at Haripur an American · Officer named Canora, holding an artillery command and the rank of Colonel in the Sikh Army. The Sikh Sirdar Chattar Singh ordered Canora to bring out his guns, contrary to the orders of Captain Abbott, the Political Officer, who gave the following account of the ensuing events:-

"The Sirdar sent two companies to seize the guns. The gunners betrayed their trust. Colonel Canora's last act was unsurpassed by anything recorded in history. He stood alone against the whole Sikh army and on his havildar refusing to fire

he cut him down and took the match into his own hand. Canors applied the match to the vent. The gun burnt priming and he was shot by two of the Sirdar's servants. He attempted to rise and cut down an officer, but his throat was severed from behind by a sabre cut."

The outbreak at Multan occurred in April 1848, and the other events narrated followed during the summer months. it was not until October that mutiny broke out at Peshawar, and by that time the whole Punjab was ablaze. War being inevitable. the Governor-General, Lord Dalhousie, undertook measures for the augmentation of the army, and 17,000 additional troops were In the middle of October the "Army of the Punjab" was constituted to take the field under Lord Gough, who had been raised to the peerage for his previous service. Early in November the Army of the Punjab, consisting of one cavalry and three infantry Divisions, which had been assembled at Ferozepore under the Commander-in-Chief, was ready to take the field. Lord Gough crossed the Sutlej on the 9th November, and, marching through Lahore, forced the passage of the Chenab in a sharply fought action at Ramnagar, the Sikhs army retiring to the Jhelum where they took up a position near the village of Chilianwala:

Although the passage of the Chenab was made good early in December, it was not until the 13th January that Lord Gough advanced to attack the Sikhs. He delayed in the first place in expectation that the fall of Multan would release to reinforce him the troops besieging that place. But he was in the end forced to action by other circumstances. Since the outbreak, the fort at Attock had held out with a small garrison under Lieutenaut Herbert, thus keeping in check large enemy forces on the further bank of the Indus. But the advance of an Afghan Army to the assistance of the Sikhs brought about the surrender of Attock. Hearing this, on the 10th January 1849, the Commander-in-Chief found it necessary to attack the enemy, considering himself, as he wrote, "perfectly competent effectually to overthrow Sher Singh's army" with the 12,000 men and 66

guns which he had at his disposal. The Sikhs at Chilianwala already numbered 30,000 men with 62 guns and it became imperative to attack them before they were reinforced by those set free by the fall of Attock.

The Sikh position was on historic ground. Here it was that two thousand years before, Alexander the Great had defeated Porus after forcing the passage of the Hydaspes by an operation which may still be cited as an example for the passage of a river in war. Here now "swords were crossed and bayonets fixed first where fought great Alexander."

The opposing forces were worthy of the historic field. Some of the finest British Corps under their veteran leader of fifty vears service stood opposed to the great military community whose rise and records are among the wonders of history. On that field were men whose names will live in history. The brave Cureton, who had served in the ranks of the 14th Light Dragoons in the Peninsula war, had fallen already at the battle of Ramnagur at the head of the cavalry division he commanded. He had been succeeded by Sir Joseph Thackwell, a gallant leader who had left his right arm on the field of Waterloo. Colin Campbell, afterwards Lord Clyde commanded one infantry division, and Sir Walter Raleigh Gilbert, worthy of his historic name, was at the head of the other. There too was Baird Smith, the skilful engineer who was to win fame eight years later on the Ridge before Delhi. Hodson, to become famous as a leader of Light Horse, and John Nicholson, that heroic figure, as yet unknown, who was to find death and immortality in the storming of the Mughal capital on the 14th September 1857.

The Sikhs had a strongly intrenched position on the hither bank of the Jhelum river, the Hydaspes of the ancients. Their left flank at Rasul rested on an intricate range of hills and ravines Their right was concealed from view by a dense jungle that also covered their front.

The Commander-in-Chief advanced to Chiliauwala on the 13th of January, intending not to fight that day but to reconnoitre the enemy's position. He arrived near the village about noon,

and dislodged a Sikh detachment posted on an adjacent mound. From the vantage of this eminence an extended view was obtained and it was seen that the enemy had moved out of his positions and drawn up in battle array on ground covered by dense Jungle, his right in advance of Fateh-Shah-Ki-Chak, and his left on the furrowed hill about Rasul. Arrangements were being made for encamping when the enemy advanced some horse artillery, and opened fire on the covering troops in front of the village. Some British heavy guns replied, whereupon this fire was returned by that of nearly the whole of the Sikh artillery, thus unmasking batteries hitherto concealed by the jungle. It was now evident that the enemy intended to fight and it was impossible to encamp under the fire of his guns. A battle was inevitable.

· The whole of the British artillery now came into action. was about two o'clock in the afternoon, and by three o'clock the hostile artillery appeared to be sufficiently subdued to admit of an infantry advance. The two infantry divisions accordingly moved forward, the left under Brigadier-General Colin Campbell and the right under Sir W. R. Gilbert. Campbell marched with his left Brigade, which was under the command of Brigadier Horsen instead of taking his place as a divisional commander, and as he failed to arrange for artillery co-operation or for the movements of his other Brigade it is not surprising that there was lack of cohesion in his command, and no concerted action between his formations. The result was that Pennycuick's Brigade on the right, unsupported, emerged from the jungle after exposure to heavy fire during the advance and found itself in the presence of the Sikh batteries which were immediately charged by the 24th Foot. Many fell at once under the discharge of grape, and but for the rapidity of the onset many more must have fallen. The battalion had already been to some extent broken by the advance through dense jungle. All order in the wild melee was gone amongst the confused and scattered groups as they rushed upon the enemy, and in a short fierce struggle, enveloped in the gloom of the smoke that clung about the guns, captured the latter at the point of the bayonet. The

enemy at once gave way, but the men of the 24th, instead of following up their success, stopped to spike the guns. delay was fatal. The Sikhs realised the paucity of the attackers, rallied, and, reinforced by troops in reserve. recovered possession of the batteries in a short and violent hand to hand conflict. The 24th were driven back with terrible slaughter, among the fallen being Brigadier Pennycuick and his son, a lad of seventeen, who had rushed forward to his father's aid. Campbell's misfortunes did not end here, for his artillery was misdirected by a Staff Officer and failed to assist the infantry, although it did good work in another part of the field. Meanwhile Hoggan's brigade to some extent restored the battle, which was, however, mainly retrieved by Gilbert's Division, advancing on Kot Baloch and Tupai. Here the 2nd Europeans, now the Royal Munster Fusiliers, did fine service, and carried at the point of the bayonet a battery in front of the village of Laliani. The Sikhs, sword in hand, charged more than once, and tried to break through the British line, but were at length driven off. The tale of disasters is not, however, yet complete. On the right of the line towards Rasul there was an unaccountable panic in Pope's cavalry Brigade, which stampeded to the rear, galloping through and upsetting their guns and exposing the flank of the infantry. A body of Sikh cavalry followed, cutting down many of the gunners, and carried off four guns and two wagons and 53 horses.

The Sikh right had, however, been rolled up by Hoggan's brigade, which included the 61st Foot, and Gilbert's troops were successful on the British right as already related. Many guns had been taken and the enemy driven from the field. But whilst the Sikhs had been driven back to the Jhelum, the British were obliged from want of water to withdraw from the field to the village of Chilianwala, and to relinquish the spiked and captured guns. Under cover of darkness parties of the enemy returned and carried off all but 12 guns which had been brought into camp.

The British loss in this indecisive battle amounted to 2,000 men, six guns, and several stand of colours. The enemy's

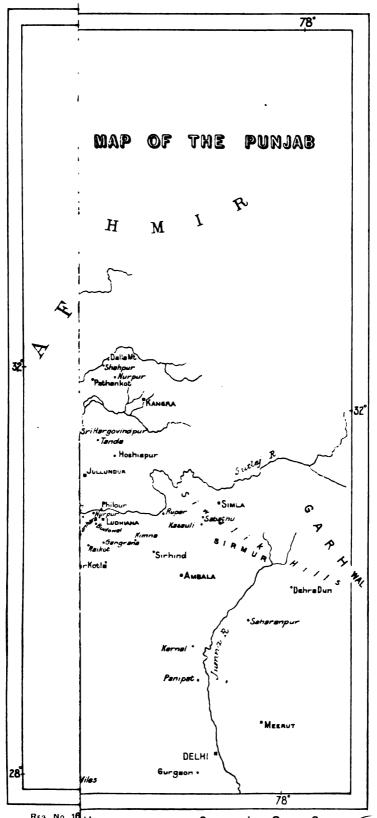
casualties are not recorded. The battle is instructive as showing the difficulty and necessity of maintaining inter-communication between the component parts of a force, especially when in dense cover. The want of success was due mainly to the relinquishing by Campbell of the command of his whole Division for that of a brigade, and to the panic in the right flank cavalry. The soldiers, both British and native, fought heroically, and by their steady and gallant bearing retrieved the fortunes of the day, and averted what might have been a great disaster.

When the news of the battle of Chilianwala reached Eugland a great outcry arose in the newspapers and in Parliament against the Commander-in-Chief. The public, as ever, were eager to condemn an unsuccessful general, irrespective of the causes which led to failure. So persistent was this agitation that Sir Charles Napier was sent out from England to supersede Lord Gough in the chief command. But in the meantime the old General had gained at Gujerat a final victory which completed the conquest of the Sikhs.

After the battle of Chilianwala the Sikh army marched to Gujerat were they threatened the British communications with Lahore. But on the 15th February Gough marched against them and on the 21st decisively defeated them in a skilfully fought battle which brought the campaign to a triumphant conclusion, and resulted in the annexation of the Punjab and the accession to our army of this brave and warlike people, who remained loyal and fought in the British ranks in the mutiny of the Bengal Army only eight years later.

This victory led to a reversal of public opinion in England. Those who had been most clamorous in condemning the Commander-in-Chief were now most vociferous in his praise. He received the thanks of both Houses of Parliament and was created a Viscount. But he had fought his last campaign. He was now over seventy years of age, and he retired to England to live for twenty years longer in peace after so much strife, in honour after so much obloquy.

It cannot be claimed that Gough was a great general. He was at least a most noble officer, determined always that nothing should stand in his way and that victory must always be achieved at whatever cost. If he was rash, rashness was better than timidity and hesitation. Our Empire in India was won by rash deeds. At any rate this fiery commander was beloved by his soldiers; and was able to inspire his men on every occasion with invincible ardour that impelled them to victory against the greatest odds.



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# "A KITCHENER UNIT IN THE MAKING, 1915."

CAPTAIN A. V. GOMPERTZ M. C., R. E.

In writing of the Kitchener Troops, one may well be asked "who exactly were the Kitchener Men?", and it is not a very easy question to answer.

In spirit, clearly, they were the men (to whom be all praise) who, being at the time neither Regulars, Ex-Regulars nor Territorials, responded directly to Lord Kitchener's personal appeal to the Nation; and enlisted quickly and freely without registration or co-ercion.

To class them accurately by scale of units is a far more difficult task; but it may be tentatively laid down, with some show of sound evidence in support, that they were essentially composed of the Divisions numbering from 9 to 37 inclusive: excluding of course the Regular Divisions 27, 28, and 29.

In the common parlance of home in early 1915 the Kitchener Troops were divided into Armies of six Divisions apiece, "K 1" being used for the 9th to 14th Divisions inclusive, "K 2" for the 15th to 20th, and so on.

The present writer is unable to say if these "Armies" ever really existed officially as such: certainly we never heard of their commanders or staffs. But in practice they seemed to conform to a certain grouping of Divisions, "K 1" for instance being mainly concentrated around Aldershot, and "K 2" round Salisbury.

One more foreword of explanation. The words of the Title "In the Making" are not pedantically accurate; for the writer had not the good fortune to join his company until the 29th of January 1915, and then only after some spirited contests with Medical Boards which only ended in a very qualified victory.

The...th Field Company R. E. was then in its fourth month of existence: the foundations of its military efficiency had long

NOTE. The 37th Division relieved the 16th Division in "K 2", and the 36th Division was of course the well-known Ulster Division, which barrackroom parlance did not include in a "K" Army.

been well and truly laid; and great progress was already in evidence both in its Military and in its Military-Technical training.

It is with the final six months of that unit's "Making" that this article deals; from those wintry days of January until we left England as a fully-fledged Field Company on the 18th of July 1915.

So much has been written of the early Kitchener Troops by Ian Hay and his successors that their character, their difficulties, and their doings, must indeed be public knowledge by now. The present writer therefore only proposes to touch upon four aspects of one individual unit, wherein it may be possible to cover some ground that has not been covered before.

Those four aspects, to be considered seriatim, are :-

- I. Personnel and Equipment.
- II. Training.
- III. A brief Diary of six months in England.
- IV. The Finished Article.

## L. Personnel and Equipment.

This will be taken under four heads, viz: Officers, Non-commissioned Officers, Men, and Equipment.

#### A. The Officers.

The great majority of the earlier Kitchener Field Companies had a Regular Officer in command; these being mainly majors and captains from the drafts of officers brought from military employ overseas, or from other pre-war employment at home.

Some indeed had Temporary Officers in command, notably in the cases of locally-raised companies billetted and trained in or near their own towns or districts, but these were few in number.

As regards the Seconds-in-Command, probably about half of these were Regulars, captains of the Gazette of 29-10-1914, lieutenants from overseas, or in some cases officers already recovered from their wounds of 1914; but these latter were not numerous as yet.

My own company possessed both Regular Commander and Second-in-Command, which eased considerably the work of training. In those companies which only possessed a Regular

commander, he was indeed a busy man, having a great proportion of the training of his officers on his own hands, in addition to that of his Unit.

As regards the Subalterns, we had a fair sample of the average arrangement, namely two from the Special Reserve, and two Temporary Officers. One in each of these two categories was already of some secure standing in the Engineering world, and thus had learnt self-reliance which is a very different thing from self-confidence; the other pair had barely, if yet, completed their initial grounding. All possessed youth and activity, most vital essentials in Field Company Officers.

Before being posted to the Company they had all been through very short courses of Instruction; but the exceeding wise policy was maintained by the High Authorities of putting them as early as possible with the men they were to lead in war, to learn and to teach simultaneously amongst them; rather than to give them long and elaborate Military Instruction at a school and then send them abroad with Non-commissioned Officers and men who would be almost unknown to them.

Thus they "grew up" with their commands day by day for months; and when at last the time came for them to go into action, if they did perhaps lack some of the final polish of a long military school training, they knew, and were known by, every one of their Non-commissioned Officers and men as thoroughly as might be; and the policy was eminently justified by its afterresults.

About march 1915 the Field Companies received a fifth or "Reserve" subaltern, the rank and file being correspondingly over-strength: in our case he came from the Special Reserve. Predestined, even by name, to the Depot on Mobilisation, and merely attached to us for training purposes, an extra officer was a great asset in those busy days. He was a great loss when we went abroad; although one could not easily have discriminated between him and the four first-comers, so well were we served in 1915.

Of the spirit of the Officers little need be said: they are shewing now for the fourth year in succession what it was and is.

If one may discriminate at all, let it be, considering the Officers of all the units one knew well, between those who had already some standing in Civil Life and those who had only just, or perhaps not yet, left University or "Shops".

The former had already carved out the beginnings of their own careers, they had met and overcome adversity, they had handled men; and, most important of all, they had begun to learn how little they did know: a lesson which sometimes comes even to the most learned of men quite late in life.

They realised, more fully than the others, how utterly new to them "The New Game" was and was going to be; and they were content to learn thoroughly and patiently, with the aid of their hard-earned self-reliance to carry them through.

These older (though still young) men made very quickly the very finest type of officer; and their men, always shrewder judges than their commanders, sized them up accordingly.

With the younger, less-experienced type of officer, there was a distinct difference. These latter were characterised to some extent by the academic self-sufficiency which obtains at so many schools and universities, but which does not long survive daily contact with the hardships and reverses of competitive Professional life. It was the Professorial contrasted with the Professional.

In war, on leaving what may well be called "School", instead of having to face the world alone as would have been the case in peacetime, they had found themselves transported unopposedly into positions of command and leading.

With them therefore, as was only to be expected, there was a tendency to allow over-confident "Bumptiousness" to serve in lieu of self-reliance unacquired as yet; and, moreover, to minimise lightly the great task of learning which lay before them.

They were usually content to learn, but more than once in a spirit of "we know of a better way than you", or of "What's the good of learning all that? We shall never need it". One

must allow in all fairness that keenness to get to the actual business of fighting, combined with youthful impatience, were responsible for some of this.

They did learn, however, and the realities of the field of battle later on saw the last of the great majority of unjustified assurance.

At times too one must also admit that they were terrible "Little Arthurs"; and, unlike the older men, they would laughingly refuse to believe that although they had nonplussed their unwary instructor for the moment, his theory was in reality the sound one. However, time and a little more forethought would always enable one to repay the compliment!!

In the case of these younger officers Active Service again proved a great leveller; and a few months of the realities of trench warfare made good much of their lack of worldly experience.

Then they too turned their impetuousness and self-confidence to the best of ends where the older men were using self-reliance; and the iuniors too became magnificent officers.

They were never, however, quite as good as their senior brother-subalterns: the essential difference between aet: 20 and aet: 25 always divided them.

If one has examined at some little length the peculiarities of the officers of certain studied units, I trust that it may be reckoned allowable since the units concerned were, to my own full and certain knowledge, such an absolute and fair sample of all the Kitchener Formations of those days. I have it on the best of authority that those two classes of subalterns were to be met with in bulk as well as in clear contra-distinction throughout all our contemporary units.

#### B. The Non-commissioned Officers.

The finding of suitable Non-commissioned Officers in the early days was no mean problem. At the formation of the company there had been posted to it a certain number of Re-enlisted Non-Commissioned Officers of all grades, but these were of necessity far too few to fill all the Company vacancies.

Others therefore had to be selected speedily from amongst the New Materials. Most of the best of these had been Territorials or Volunteers at some period in the old days. In the earliest promotions, a sense of discipline and the power to impart it to others was reckoned a more essential qualification than technical efficiency of any kind.

By early 1915 confident selection first began to be possible from amongst the real Kitchener Men; but even then the Appointment (and occasional Disappointment!) of Unpaid Lance-Corporal under the sole authority of the Officer Commanding proved a most useful asset in the necessary amount of trial and error.

Fortunately a sufficiency of Re-enlisted Regulars existed for the essential senior appointments of the Company, namely the Company-Serjeant-Major, the Company-Quartermaster-Serjeant, the Pay-Serjeant, the Mounted Serjeant, and two of the Section Serjeants.

Of the timely services rendered by these men it is impossible to speak too highly. They realised fully the short time that lay before them for instructing the Junior Non-commissioned Officers and the men; and, although some of them naturally proved a little too old for the stress of a trench winter in Flanders, their best and finest testimonial is that even after twelve short months of work they left behind them men of their own training who could fill their places with efficiency.

One of the chief difficulties with the Kitchener Non-commissioned Officers of early days was not indeed to curb a tendency to their straining their authority which one has occasionally met with in over-quickly promoted Non-commissioned Officers in pre-war days; but precisely the opposite.

What was hard to inculcate was the true sense of their position in authority and in responsibility, as selected men in lawful command, as Officers without Commissions.

The Spirit of "Pals" was far more in evidence than the Spirit of Disciplined Authority amongst the earlier Kitchener men:—men whose coteries often had enlisted en bloc in their

native towns and villages. Their quickest instinct in obeying was that their own "Bill", temporarily in authority, had asked them to do something; and not because Corporal William Smith had given them an order.

In a night wiring party, as late as August 1915, there was a hitch; and twelve men sat outside the trenches in shell holes, amid the bullets, waiting for orders and keeping each others' spirits up.

"What are you all waiting for?"

"We're waiting for Frank to come up and start us off, Sir."

Frank was Corporal B......, in temporary command of his Section; and from earliest days until an unlucky bullet lent him a well-earned rest in 1916 he had more complete control over his men as "Frank" than any crown on his sleeve would ever have given him.

So it was at first with all our new Non-commissioned Officers; but by degrees continual contact with the Re-enlisted (and hence older) ones substituted judicious discipline for mere friendship. Thus gradually was overcome the great danger of "Harry", in complete and confident command of his own Section, having possibly no command whatsoever over any stranger section or party to which he might be posted.

The true sense of Responsibility too was hard to inculcate during the well-ordered life at home; but a very short time in the field set this right and made firm and good the barrackroom teaching of England. They learnt the sense of Responsibility quickly as soon as ever they saw in practice the cost of even small mistakes.

C. The Men.

There was hardly a single point to criticise in these: what one would have liked most of all would have been more time to train them.

And that not for any suggestion even of slowness or disinclination on their part to learn; but only in order to have the more time to develop and mould their magnificent qualities to the best uses of the Military Machine. One can perhaps discuss them best from two points of view: firstly, as technical sappers, and secondly as soldiers.

I have placed the technical point of view first, because it can be summed up in a very few words. The great majority of the men left nothing to be desired in a technical way. Carpenters, joiners, plumbers, smiths, fitters, of all the skilled trades the War Office had half the pick of England to send to us; and there was no need to fill the gaps of a Company with indifferent craftsmen.

Many of our own men serving as plain sappers in the ranks had been earning three, some up to four and five, pounds a week at their trades in Civil life even in pre-war days. We had Master-Carpenters, Master-Masons, and other artisans alike of the highest skill. Teaching them their trades was almost unknown: all that had to be done was the light task of applying their crafts to military devices and usages.

As Soldiers, there is more to say of them; but here again only of the best, and far more than the writer's humble tribute is ever likely to accomplish. Their Keynote was:—Seriousness Willingness, and Keenness; and one could have written the three corresponding adjectives with truth on the character-sheet of practically every man of the Company as it left England.

Serious they were, for they realised full well the seriousness of the duty they had undertaken. The Kitchener Men did not "join up" lightly: they came of their own free will and of set purpose, knowing equally well what was and what might be in store for them.

They well knew why they came; and their knowledge gave them added strength to see it through, to perform the duty they had set themselves, involving if needs be the greatest sacrifice of all. It was enough to make any man serious.

Their willingness made them the easiest and best of recruits to train: nothing in the shape of orders, conditions or surroundings came amiss; although like wise men they liked reasons as well.

The utter newness of their daily life, the continual restraint of authority, the regularly ordered existence, must have been the

greatest of changes to most of them after their independent civilian life of a few weeks ago. But they accepted everything cheerfully, and absorbed willingly the greatest lesson of all:—"Obey first, and question afterwards".

They often used to question afterwards; but never in a spirit of insubordination, always in a spirit of unaccustomedness. One explained the necessities to them; and they were satisfied, or at least they would accept the unsatisfactory as explainable and necessary.

To them, everything unaccustomed or, as sometimes had to be, unpalatable, was part of what they had undertaken. They had joined up with their eyes open, prepared for surprises and for possible discomforts and disillusionments; and they took all their minor hardships, worries and sacrifices exactly as they took their wounds and death later on, as part of the day's duty that they had set themselves.

Their keenness made them splendid men to command. They were "out to learn" as much and as fast as they could: to become efficient soldiers in the shortest possible time; always with the one great end in view: namely that of safeguarding their own hearths and homes once and for all by beating the enemy at his own game.

Their Seriousness had included a very distinct idea of how much they had to learn: their Willingness helped them to learn quickly in the very short time at their disposal; their Keenness it was that bade them learn everything thoroughly and completely.

They wanted to know the reason of everything, not from curiosity, nor alone from unaccustomedness; but in the vast majority of cases because they knew well that thorough performance needs thorough knowledge; and they were always looking ahead.

Voluntary classes out of the regular hours produced "Full Houses"; nothing was too much trouble.

They were gloriously keen to fight too, as the best of soldiers should always be when the Cause is just. When first

they began to feel their footing as trained soldiers, perhaps about May 1915, every week that went by seemed to them to drag; it was always "When are we off, Sir?"....." When are they going to let us go, Sir?".

In those days, as I have said once before, the worst punishment that we could threaten was to mark a man down not to accompany his Company overseas.

The spirit of New Adventure may have had some little to do with this: they would not have been real Englishmen if it had not; but there was far more than that in it, there was the Cause above all. And it was the Cause which gave them that spirit of firm self-reliance which has characterised them all the war; and which has helped them continuously to maintain in the face of all dangers and difficulties that standard of excellence which has been the surprise of the whole world, Civilised or Kultured.

So much for the men; and of course therein must be included the Kitchener Officers, and Non-commissioned Officers too. One hesitates to say more, all the very much more that is in ones mind, lest one be taken by the uninitiated for a mere "Enthuser", or purveyor of larded praise.

Before one passes on to further points, perhaps a word is due regarding the origin of our own men. Nominally we were a Western unit: actually we had men from almost everywhere. Perhaps the preponderance were Lancashire and Cheshire; but we had Scotsmen, North Country men, Midlanders, Londoners, Southerners, Kentish men and Men of Kent as well.

We were more of a Representative than a Western Unit; and therefore it is the fairer to postulate that the qualities of our own men were truly representative of those of each unit of the whole great mass of Kitchener's Men.

## D. Equipment.

This in its early days was perforce scanty and variegated.

In differentiating between Personnel and Equipment, the latter may be taken to include Animals. In January 1915 we had a mere score or so of our eventual eighty odd, mostly riders, and varying considerably in the scale of quality.

Fresh drafts however came in driblets; and early in February came our first batch of big Argentine mules. They were magnificent specimens of their kind, some of them as big as our more ordinary horses, one or two making quite good riding mounts at a pinch. They were known for ages as "Listeners": a platform porter having signalised their arrival by a nod and a wink and "My, ain't them 'osses of yours got listeners!" to the engine-driver of their train.

In the stables they caused a terror which was not materially lessened for some appreciable time. Many of our drivers were then only just learning to groom. Unhandy enough with steady old horses which they could pet and make friends of, their attitude with, and their reception by, sometimes half-broken mules may well be imagined. Moreover some of our mules were prize packets of pedal pyrotechnics in all directions.

They had other uses beyond their draught work however; for in the very few cases where drivers were found in real default, "Take away his horses and give him a pair of mules" produced a far speedier amendment of life and manners than days and days of Confined to Barracks could ever have done.

Early in April a noble batch of forty-two Draught Horses arrived, and was led in positive triumph from the railway station through the Lines to the Stables. The Mounted Section not only breathed again; it shouted its exultation aloud!

Next day, after a preliminary veterinary inspection, we paired off the newcomers and alloted them to their drivers. That morning at early stables, you could not have found one grain of dust nor speck of dirt on any one of even the most untractable mules, so anxious were their drivers to be selected for change to a pair of horses!

Where the forty two horses came from I do not remember: some few of them were obviously only temporary visitors from the day of their arrival. Both the Mounted Serjeaut (of twenty-five years service) and the Mounted Corporal (a professional horsebreaker in civil life) looked askance at two or three of them where my far less experienced eye was still rejoicing.

But herein lies a great tribute to the extraordinary efficiency of mules in the mud and stress and exposure of a Flanders campaign. Only nine short months after that well-remembered day in April, a mere baker's dozen of the forty two horses remained with the Company, the rest having gone sick one and all. But of our twenty-five mules, twenty-three were still hard at work every day and fit for anything to come. As being in charge of the Company Horse book, I am sure of my figures.

Shortly afterwards came our Pack mules, little things, waist-high to a tal! man in the most absurd contrast to the Argentines. 'What are you doin' with them new breed of mice?' was the comment of the horsebreaker corporal. But when they chose to be stubborn it took six men to move one of them.

Our fourth pack animal was a horse, relegated to pack duties owing to her extraordinarily long low body, and her apparent inability to move at anything but a walk. "Endless" was her name, as we dealt only in E's after our Commander, "Magnificent wheel-base" said our Brooklands subaltern.

Our vehicles in early days were as variegated as our stud. Pontoon and Trestle wagons we knew not except on the Pontooning course of which more later: General Service wagons of an obsolete pattern we possessed, and the balance was made up of small mule carts rather like dust carts.

"Carts Maltese" is, I believe, their proper name: to us they had another nomenclature due to a Scotch Lance-corporal in his early untrained days:—"Driver B.....Sir? Och you will be meaning him wid his moke and cairrt, Sir?"...and "Moke-cairrts" they remained until we left them behind in England at the finish.

Harness too was issuable to a certain degree only. All our team driving was carried out with two or three sets of wheel harness, with the help of string traces made up of rope borrowed from the fieldworks store. At one time we had considerably less saddles than animals, and more than one second-hand hunting saddle did yeoman service until the real articles arrived.

For rifles we carried on for many weeks with D. P. ones: a certain number of the genuine article being available for the completion of musketry courses, which were passed from section to section.

Fieldworks stores, various and minor equipment, these are all uninteresting matters. Suffice to say that we carried on as best we could with makeshifts in the early days; and when the late spring came, bringing with it all we were entitled to, there were few things indeed whose use was unaccustomed.

For Bridging work I admit we did sometimes hope that the local Contractor, building whole towns of hut barracks, did not count his building materials too accurately or to often. But everything was always replaced after use, and nail work in borrowed timber was taboo.

By mid-June we were practically fully equipped; and few things indeed remained to be drawn in the last hurried days before going abroad.

Before finally quitting the question of equipment, it may not be out of place to make very brief mention here of our barracks, which after all form a very essential part of a unit's assets.

We were lucky over these, in possessing a certain number of pre-war hut Barracks, built shortly after the South African campaign, and of a high standard of excellence for buildings of their kind.

The Officers' Mess was the original one of two Field Companies, of "Old Contemptibles", and even in our day it was by no means deplete of fairly comfortable furniture. Our quarters too were of the same class, though we had but a single microscopic room apiece:—half the peacetime scale, and most of the subalterus had to halve even that again.

The Mess Billiard Room, devoid of its table, was a dormitory for junior subalterns, known alternately as the "Nursery" or as the "Baby Farm." Here, as in the other quarters War Department furniture was the order of the day, severe but serviceable.

The Non-commissioned Officers and the Men were partially lucky to the same extent, having the use of the old Non-Commissioned Officers Messes and of part of the old Hut Barracks and Dining rooms.

Some however were housed in the rapidly growing New Huts, paragons of serviceable economy-cum-quick-erection: cold and cheerless compared with the older buildings, but most welcome and adaptable shelter from the rigours of January and February.

The least fortunate of the rank and file were in bell tents pitched between the huts for better shelter. The tents were floorboarded and their sites were most carefully drained; and the men managed to keep very fit in them, and very cheery as well, despite cold and wind and never ending rain.

Indeed we were very well served on the whole for quarters compared to many less fortunate contemporaries; and our percentage of Morning Sick used to be extraordinarily small.

For Stables again, we had some of the old well-built percetime ones, nearly all the balance was made up with the new hastily constructed open sheds; only a very few animals being permanently on picket line.

For drill we had the old parade grounds, which however used to cut up rather badly in wet weather; and we had the use, on certain days of the week, of one of the old closed-in roofed riding schools.

For all and sundry purposes we had one of the two greatest open spaces of Downs in England all around us at our very doors, and we could not well have fared better for training purposes. Certainly we were infinitely better off than the troops in the towns.

Amusement for the men was certainly lacking, with the nearest town worthy of the name a full twelve miles off as, the crow flies; but there was indeed little time to feel that particular need in the early days. Later on, as the spring came, Picture Palaces with their film and variety shows grew up like mushrooms alongside the new hutted camps. We were

well served with two almost inside our lines; and officers and men alike took the fullest advantage of them.

So much for our barracks and surroundings: I now pass to the Second feature of the article, vis: Training.

### II. Training.

The training of what was essentially a mass of raw recruits to fit them for the field within a brief year at best, was no light task. Even after their first four mouths of concentrated work there remained an enormous amount to do.

To discuss their training in detail would be beyond the scope of this short paper. The writer therefore proposes to deal with only three aspects of training which appeared to him to be of particular interest as differing widely from normal pre-war conditions.

Before proceeding to these three aspects in detail, the training of the new officers may first be considered, in a very few words.

The technical training of the Officers was a comparatively simple matter. Like the men, of whom I spoke previously, they were all qualified Engineers of a kind; so that one had merely to adapt their knowledge to Service requirements, and never to teach them first principles.

Their Military Training was not quite so easy. Much could be done by supervising them continually whilst they were at work with their men: the balance had to be made up by "out-of-hours" lectures, in the Mess, or in ones own exiguously small quarters with part of one's audience sitting on the washstand and half of it on the bed.

All the time was the King's in those days: there was no Eight Hours Bill as far as we were concerned; and additional instruction had to be crowded into extra hours, not after Mess if we could help it, although that was not always avoidable.

Results however grew apace. One never learns so much as by teaching and by having to teach, whatever the subject is. Our officers were continually with their men at work supervising them, training them, and training with them; and herein

they undoubtedly learnt more than we could ever have hoped to teach them out of hours, as well as learning more and more about their men.

More need not be said about the training of the new officers. I now pass on to that of the men.

The first of my three aspects of that is the Inculcation of Discipline: one which is of course the first essential of all Military Training, and is moreover interwoven throughout all the other essentials.

Herein the teaching of the Kitchener Men had to differ very materially in its methods though not in its ends and tenets, from the ordinary instruction of pre-war soldiers.

In the olden times, recruits arrived in very small numbers compared to the formations which they joined. As a subdued minority, they became gradually incorporated in an old-established body of set manners and fixed habits: discipline in its best sense was already more than a tradition all around them, it was a firm influence.

They met it at every turn each day as an established fact; and they themselves, mixing more and more with the leavened majority of older hands, assimilated themselves to discipline and orderliness in a quiet and natural process of transition, until they became of entirely the same stuff as their seniors, unconsciously.

In the Kitchener Armies there was none of that. The exiguous minority was made up of the re-eulisted scions of discipline: the overwhelming majority was the party of untrained novices; and their lesson had to be impressed upon them daily and hourly as best might be, on the barrack square, in the riding school, in the barrackroom lectures. And in dealing with this question, one cannot speak too highly of the re-eulisted Non-commissioned officers.

Few of us realised then how much of the discipline of a unit was due to them, not for its conscious and magisterial imparting, but for their own complete sense of it before their own new officers.

In some cases it must have been trying indeed for Twenty Years of warrant rank to remain deferential before very much less than twenty weeks of Commissioned rank, especially when the junior in service might perhaps not be as much in the right as desirable.

But the older men, true to the principle of "obey first and question afterwards" stood their ground without impatience and it had a great effect on the men. If the serjeant-major, who to them was truly a power in the land, stood stiffly to attention before the last-joined junior subaltern and remained mute until spoken to, so much the more did they when their turn came.

And so, perliaps unwittingly was done a very great deal indeed for the cause of discipline; and all the greater honour to those who did it wittingly.

The great majority of our own men came from the self-protected trades, and so had always been accustomed to that independence of thought and freedom of action which is rightly the proudest possession of the British Artisan. Rigid discipline they knew not; and the continual restraint which perforce it brings until its bonds lighten to nothing by usage and habit, was a new feeling to them.

They accepted it willingly, as "part of the show"; but they wanted an explanation. "The rules of the game" said the writer; and they had learnt, without realising it, the strictest discipline of all, in those fields of play.

So we expatiated to them. "You are learning to play a new game; the greatest game of all. It has its rules, just like every other game, and there are lots of them, and some of them will seem very strange at first.

"Although I shall do my best to explain as many as possible, you may not ever know exactly why some of them were made: any more than any of you here know why the penalty mark is exactly twelve yards from a socker goal and no nearer nor further.

- "But, just like all the Football Association rules, every one of the rules of the New Game has been made for a very good reason; and the longer you play the game, just like socker, the more you will see why each rule was made and what its real value is.
- "If you refuse to stick to your own F. A. rules, you get ordered off the field, don't you? or, even in a first instance, your side has to suffer in some way, by a free kick against it, or some thing else.
- "Well, if you refuse to obey the rules of the new game, your side will also have to suffer for you, and if its a bad case, you yourselves will be ordered off the field. Perhaps only by your own Non-Commissioned Officers or by me now; but later on you will be ordered off by a much stricter referee, namely a a German shell or machine gun. And as you walk off then for good and all, you will realise very fully that if you'd only obeyed the rules you could have gone on playing; and you won't like it.
- "Every single rule of discipline is made for your own good through your own efficiency, although it may be a little difficult sometimes to see how and why."

They understood that: henceforth discipline was only a new form of an old habit; and they were helped to assimilate it by the undoubted fact that the British, alike in work and play, are the most law-biding nation in the world. Make them satisfied with their laws, and they will stick to them through thick and thin; and so it was with the Kitchener men.

To our men, "The Rules of the Game" was henceforward a catchword sufficing for any obedience work, or penalty.

A second aspect of the training of the men was one which I have already touched upon in some measure: namely that they needed practically no technical training; but only the adaptation of their trades to military ends. This of course was vitally different from peacetime conditions, when there was far more money to be made in civil life than in the army and above all there was no Cause; and many sappers on enlistment had anything but a masterly acquaintance with their trades.

It also proved a vastly valuable asset with regard to our strictly limited time-factor: we could never have taught the men their trades as well as have made soldiers of them in the short time at our disposal.

Fieldworks, a most vital subject, were thus able to be commenced very early indeed in the life of the company; and the use and abuse of the ordinary military tools and materials were inculcated on the bridging ground, the digging ground and the wood-cutting ground long before squad-drill and musketry were anything like finished with.

Lectures too were given almost daily; and these, given generally in barrackrooms and semi-informally, were most valuable in getting the men in at "off-parade' spirit, and so seeing far more of their real character and attributes.

The third aspect wherein many of those earlier Kitchener units differed materially from their Regular predecessors, was in their "peacetime" or rather "training" strength of numbers.

Many of the pre-war units used to have to expand on mobilisation, if only very slightly. With us, we had an additional officer, and roughly 30% overstrength of men (mounted and dismounted alike) and of animals too, to pick from.

I cannot say authoritatively why this was the case. It may have been to provide a certain depot strength on mobilisation to provide subsequent draits: it may have been in order to give us a certain desirable selection on mobilising after such a short time of training; or it may have been, in those hurried days of compressed militarisation, so as to let more than the warstrength numbers of each unit share the benefits of that unit's education.

But for us it had the second effect, namely to allow us to pick and choose our men for overseas. And that was no mean benefit; since after nine short months of training it was highly desirable to take abroad none but the best and fittest.

Moreover the men, as I have said, were extraordinarily keen and impatient to get to the fighting. The coming selection therefore put them on their mettle in competition to go; and

provided them with yet one more spur to learn and train quickly; although their personal motives were already their greatest incentive of all.

This was a great and welcome departure from what has been at least sometime the case in peacetime. Far from expanding, we contracted on mobilisation to a minimum of the most efficient; and disappointed indeed were the faces of those who saw us off in mid-July, themselves destined to proceed to the depot next day.

Much more might be written about our training; but not within a short space nor without continual reference to uninteresting training programmes which already exist in published form. I therefore pass now to my third heading, namely a very short account of our doings in England for six months before going on service.

## III. A Brief Diary of six months in England.

Those early riding school days were not unproductive of incident: fully to be expected when more than one hastily enlisted driver's reply, on first inspection, was "well, yessir. I was a driver, I used to drive a "little engine."

They buckled to it wonderfully however; and after a couple of months' rigid riding school, independent control of their animals in the open was hurried on apace, as the surest way to good driving. This was helped out by the Mounted Serjeant's oft-repeated order of "Now them, Driver, Smith you ride out to, that tall tree just left of that copse, gallop out, and when you get there, turn and come back!! You know what I mean".

They did know what he meant; but they didn't always persuade their horses to carry them back in the earliest days.

In February the company was ordered to march by stages to Pangbourne to undergo ten days training in pontooning, billeting at villages and towns on route; but it was recalled by telegram when within a day's march of the destination. The days spent on the road were invaluable training nevertheless; both as our first taste of road-discipline, and for the daily change of billets and surroundings in contrast to the orderly life of the hutted camps at Z.......

On the first day out the men took a long time settling themselves and their animals down into their new accommodation, on the second day much less time; and by the last day they simply "melted" off the market square as if going to their own barracks.

The experience gained by the officers and non-commissioned officers too was of value, not only for later billeting marches in England; but for the acquaintance gained with the general usages of billeting which stood them in very good stead in France too.

The sappers learnt for the first time the real weight of rifles and packs; but to the mounted men the abortive journey was probably of greater value still. "Animals first, then yourselves" was rigidly insisted upon, and woe betide the man on first parade next day with ungroomed horses or dirty harness; and they learnt a great deal by actual experience in the matter of fitting harness, minor galls, and saving their animals: a heap more than we could have taught them by word of mouth.

In stable duties too they learnt. It was easy to them to do their work punctually at Z.....in the lines and under the eyes of their officers and Non-commissioned Officers; but there was less inducement to quit a comfortable bed in a town billet at six instead of seven with no one looking on and the possible chance of not being found out.

But their spirit stood them in good stead, and they did get up.

In mid-march we proceeded again in the direction of Pangbourne, this time to arrive there without incident. Our

subsequent ten days in that village still remains in the minds of all concerned as the brightest period of the whole of their training existence. The billets were best, the people the kindest and pleasantest, and the surroundings the prettiest, that ever we met in our moves in England; and the work was at least more of a novelty than anything we had as yet undertaken.

Pontooning was carried out at Paughourne under a small permanent staff of Warrant-Officer Instructors; and a considerable quantity of pontooning materials was kept permanently stored at site: the Field Companies relieving one another at ten or eleven day intervals.

Work was divided into three shifts of four hours each day (Sundays barred), namely 9.0 to 1.0, 2.0 to 6.0, and 7.0 to 11.0, the last being night work. Each sapper section put in, under its own subaltern, two out of the three shifts each day by rotation.

For the Mounted Section there was much less change of employment; but what there was of new conditions was turned to advantage.

For one thing, it was impressed upon all that they were now "Out of barracks and into the World"; so that not only were their own Officers' and Non-Commissioned Officers' eyes upon them daily, but those of a certain portion of the great British Public as well; and that therefore their bearing, their turnout, their drills, their parades, their animals, their harness, and all, must be even smarter and more soldier-like than ever before.

This they appreciated wholeheartedly; and a fresher spirit was in evidence than during the humdrum daily existence of Z........camp. But far be it from me to say how many of the eyes responsible for this were the property of the notoriously pretty feminine portion of the Nation at large which inhabits Berkshire!

Another thing which proved a most useful asset after the tranquil country roads and villages which we had hitherto been accustomed to, was the close proximity of as large and as busy a town as Reading. Each day a large part of the Mounted

Section was taken in and about the town and then home again; the men and the animals being thus "broken in" to very crowded thoroughfares, cobbled pavements and steam tractors ("Clattery Jacks"), multitudinous trams and motor traffic, and thunderous overhead railway bridges.

Those processions again were productive of incident, but the men liked them unanimously. The change from lonely countryside was gratifying to them to a degree; and here again the eyes of the British Public (f) were more than a recompense for the trouble that some of the animals gave.

For the Army was young and new and very happy, and England was not yet used to it; and more than once as a Theatre emptied after Rehearsal-time or a girlschool "crocodile" came snaking slowly by, one suspected at least some of the younger drivers of surreptitious digs of the spur to produce a sufficient stamping and jingling to draw much attention!

This experience of town driving gained at Reading stood the Company in very good stead in its later acquaintance with the big towns of Flanders.

We returned to Z........at the beginning of April; and from then onwards the spring and the early summer weather allowed of extensive outdoor tactical training. Always reminded that "They must be soldiers before they were sappers", the men were taken out first by sections, and later on as a company, to perform tactical evolutions as infantry in attack and defence.

In May and June company was pitted against company: the most satisfactory way of doing this proved to be the combining of some of the transport of two companies into a convoy, which was to be defended by the men of one company on its march, and attacked by the other.

On these occasions the mounted men who were not already employed in driving were used as mounted infantry or as cavalry on either side; this giving them better individual training than had been possible either in riding school or in section drill.

All this time, fieldworks were being carried out continuously, growing more advanced as time went on. Model defence systems

with all their trenches and posts were constructed; and all ordinary R. E. work in the Line was practised by day and by night. The night work was made as realistic as practicable by the use of some home-made flares, innocuous but noisy trenchmortars and bombs, blank ammunition, etc., by garrisons detailed to the opposing sets of trenches.

We were kept in pretty close touch with developments in Flanders by the periodical issue of "Notes from the Front"; and also by the eagerly-listened to discourses of selected senior officers who at times were given "Cook's Tours" for a few days in the real Line for the benefit of us at home.

Moreover by now a certain small number of the officers wounded in 1914 began to make their appearance again on Light Duty in various local employments; and they proved most valuable sources of information.

Although the intermittent arrivals of fresh batches of recruits as late as early spring had caused some temporary dislocations of programme and the necessity of recommencing some of the past instruction; we had, by early June, practically completed the various phases up to and including Company Training.

Much invaluable work was done with these actual recruits by a supernumerary (re-enlisted) Quartermaster-Serjeant-Drill Instructor, who proved himself capable of taking entire charge of large parties in all ordinary subjects. Thus the Company Officers and Non-commissioned officers were left far freer than they would otherwise have been, for the continuous training of the earlier-joined men.

Programmes of training, revised to meet the peculiar time and circumstances, had been issued for all Kitchener Units in 1914, having due regard to the probable length of time available to carry them out.

These had been duly complied with and fulfilled; and about mid-June the Division had the honour of being inspected by His Majesty the King in Field Service marching order: 'the

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first occasion on which we had paraded as a complete Division, with horse, foot guns and all other subsidiary troops.

The remaining five weeks of our stay in England were principally taken up with two further items: namely somewhat elaborated Trench Warfare; and what may best be called Finishing Touches. The Division never carried out Divisional Training nor training by Brigade Groups in open warfare before it went abroad.

In the matter of the first of these two items, Elaborate 1 Trench warfare, about a mile-length of two complete and opposing trench systems was constructed about five miles from barracks. They were made as complete as circumstances would allow, with firing, supervision, and support lines, communication trenches, dugouts, aid-posts, wire defences, saps, mines, trenchmortar emplacements, etc. They were also made partly of trenches and partly of breastworks, to practise the two systems.

The Division itself constructed the whole set, both by day and by night work. After that, for about four days, trench warfare was waged also by day and by night, units remaining in the trenches for 24-hour or longer spells. Attack, defence, and reconnaissance were practised, and the other more usual trench operations. Raiding had not yet of course become a systematised feature of trench life.

Reality was added to the operations at certain times by one of other side firing with. 22 ammunition between specified hours: the opposing side being then given a rigid lesson in the art of keeping under cover, which they did most effectively. In these trenches again night operations were aided by the use of noisy but harmless apparatus of all kinds, as like the real thing as possible.

"Spotting the Crawler" was a prevalent game in the training of sentries: the referees (bold men) had to walk up and down in No Man's Land; and, I fear, were more than once greeted with handy lumps of chalk by the more flippant spirits if they happened to be of sufficiently junior rank!

This trench warfare replaced in some sense the pre-war days of Divisional Training, and was our first and last completely co-operative work at home.

The other item of those last few weeks I have called "Finishing Touches". It comprised such few co-operation lectures by other branches of the Service as there was time for; a complete and thorough series of first-aid lectures by the Royal Army Medical Corps, the drawing and familiarisation of such small quantities of mobilisation equipment as we had not yet received, practice in entraining and detraining with men, animals and vehicles, the last perfections of drill and company evolutions; and, last but by no means least, 48 hours of "Farewell" leave by batches for every single officer, Non-commission officer and man of the Company to their sometimes far-distant homes.

At 6-0 p.m. on the 17th of July we packed and parked all our company transport for the last time; and at 2-30 a.m. on the 18th the Company fell in in the soft darkness of a summer night to march off into the Great Unknown.

### IV. The Finished Article.

As we marched off into the dawn and daylight of that July morning, we might indeed, together with all the other units of Kitchener's Army, have been called a "Picked Company".

Although our training had been short, it had been concentrated and systematised to a degree; and that with surely the most keen and capable material that ever fell to the lot of a lucky Instructor.

By the time we went abroad, new officers new Non-commissioned officers and new men alike had learnt well all the ordinary routine of their soldierly duties, and had become satisfyingly efficient at them. In spirit they were ready to meet anything whatsoever that fate might bring them: in military arts they were at least ready to meet any of the vicissitudes that were ordinarily likely to befall them.

As regards Discipline, the keynote to all consistent military success, it cannot be claimed for them that they had so fully accustomed themselves to its constant practice as to possess it as

a deep and compelling instinct. That, which is perhaps the highest desideratum in an army in war, can only be obtained by years, not months, of constant teaching: the time factor is an essential.

But we had no fear on that score: the Kitchener men had done the hardest thing of all; they had learnt well, and become thoroughly imbued with, the Spirit of Discipline. The foundations were laid: the work was to be slowly and surely completed by time and re-iteration alone, as indeed it was in after days.

The New Army had learnt other things too: its free volunteers had learnt self-reliance, they had learnt to shift for themselves, they had been soldiers at least long and keenly enough to feel a surefooted way through all the ordinary difficulties of a soldier's life; and, above all, they had learnt to remain content and confident throughout the hourly certainty of a completely uncertain future.

The officers knew their men thoroughly, the men knew their officers perhaps more so still: all had a pride of place and a pride of Cause sufficient and more than sufficient to enable them to face with equanimity whatever luck or fate might befall them. Esprit de Corps had been diligently and most successfully engendered; but the Cause came first with every man.

In the humble judgement of one, who has had the honour and the privilege of serving in training and in war with real Kitchener's Men, their own indomitable spirit and Pride of Cause as they went abroad were of a quality so fine as to have never been surpassed before or since by any Army in the Field.

It is not within the scope of this article to tell of how their training bore fruit in the battlefield, nor of how the character and stamina of the men bore far greater fruit still in the face of all odds.

Let it suffice to say, always with the proviso that never has the necessity for a large Standing Army been so clearly demonstrated to any Nation as to us in the present war, that the Fînished Articles of Kitchener's Armies were the greatest and completest tribute to the possibilities of a Voluntary System that the World has ever seen or is likely to see.

#### TWO MOUNTAIN CAMPAIGNS.

BV

I propose to examine shortly two campaigns, fought under conditions almost identical with those we meet with on the North West Frontier, and, as we analyse them, we shall see that the Commanders who brought them to a successful conclusion anticipated the principles contained in Field Service Regulations, while the effort of others failed through neglect of these same principles.

In 1651 the Scottish army under Leslie, already soundly beaten in the previous year by Cromwell, at Dunbar, was crushed at Worcester. The few remnants fled to the wilds of Scotland, and, as German agents are now doing elsewhere, strove to raise the wild tribes of that desolate country against the Government. To put an end, once and for all, to the continual trouble from that quarter became imperative.

The Western Highlands of Scotland were not at this period
a success on of beauty spots, inhabited by
fair women and gallant gentlemen, as some
prejudiced writers would have us believe.
The Country North of the River Forth, was a rocky barren, heather clad wilderness, intersected by swift running streams and deep ravines. Communications were practically non-existent, and many of the passes were defiles where a few resolute men could defy an army.

The inhabitants of this inhospitable region were for the

Characteristics, Arma most part savages pure and simple. Tribes,

ment and tactics of the who burnt their hereditary enemies alive
tribes.

and drowned their shricks with the equally
piercing strains of the War Pipes, could not, by any stretch of
imagination, be considered civilized.

# SKETCH MAP OF SCOTLAND-1651,1745.





Characteristics.

• flating out into active hostilities on the slightest provocation. They were governed by Chiefs, who, with few exceptions, were as savage, blood-thirsty and rapacious as themselves. As soldiers the clansmen were badly armed, undisciplined, and liable to extremes of elation in Victory and depression in Defeat. On the other hand they were hardy, expert mountaineers, capable of swift movement over very bad country, and knew their own districts to the last rock.

Their tartans were colours to suit the prevailing backgrounds of their Country. Thus the clans in a heather country wore reddish tartan.

They were aimed with sword and shield, or in the case of the poorer with scythes, and a few exceptional cases with firearms of a primitive pattern. Pikes, axes, and stout clubs all found a place in the motley array. Their tactics were those of Guerillas. They were expert in ambushments. They were unskilled, though reckless and determined swordsmen, and in common with all hillmen, preferred to attack down hill. Plunder rather than decisive victory was their object, and, this end attained, they melted away, to their own hills, to re-assemble on the departure of our troops.

Organisation they had none in the modern sense of the word, and supplies they carried on the person, trusting to the spoils of victory, or the plunder of the peasantry for replenishment.

They were commanded by Glencairn and Middleton, the former in Lochaber, the latter in Suther-land.

History has nothing to relate as to their qualifications.

The establishment for Scotland at this time was 9 regiments of foot and 8 of horse. The foot were armed with fire lock and pike, the horse

with sword and pistol. The horse in addition were partly armoured.

Discipline was good, the men were of a good stamp, and Cromwell had brought the Army to a pitch of efficiency unknown before.

The issue of the war had inspired them with complete confidence in themselves, and in their leaders.

The East and South of Scotland was secured by a strong line of posts running from Inverness through Stirling, to Ayr.

The South West Corner was held by clan Campbell, the most powerful as they were the most civilized of the clans.

They had been won over by diplomacy, and seeing their way to material advancement at the expense of their less foresighted neighbours, remained staunch to Government.

George Monk, the General Officer in Command in Scotland, had been trained to war in the Low Countries under Prince Maurice.

It is curious that in the same army were Skippon, Fairfax, Lambert, and many other Parliamentary leaders.

Originally a Royalist, Monk eventually took service with Cromwell, distinguishing himself in Ireland. From the command of a regiment, afterwards to become the Coldstream Guards, he rose in 4 years to the Chief Command in Scotland.

with the situation by rule of thumb, without success. Monk's plan was to cut the Highlands in two along the line of what is now the Caledonian Canal, thus preventing the junction of the two halves of the enemy's forces. The country to the North of this line was sufficiently circumscribed by Nature.

South of it he had to fix his own boundaries. His first step was to establish bases of operations, for he realised that in country such as he was now operating in, "a force may have to be

split up into small and compact columns moving on separate lines."

His bases were at Kilsyth, Perth, Inverness, Dingwall,

and Inverlochy.

The latter was seized by Colonel Brayne's column which completely surprised the garrison, owing to the secrecy with which it's voyage from Ireland was made.

As soon as this movement was completed, Monk himself marched into the hills and attacking.

Glencairn completely defeated him.

This success closed the only gap in his dispositions. i. e that between Loch Lomond and the Clyde.

Meanwhile the Dingwall column under Colonel Morgan, whose role it was to prevent the junction of the North and South portions of the Royalist Forces, had been out-manoeuvred, and Middleton passed South, to join up with Glencairn.

Monk, in no wise perturbed, shifted his base to Perth, and at once advanced into the Hills. In two days he established a depot at Loch Tay, and; while there, news reached him that the North Clans had been summoned to meet at Loch Ness.

He gave orders that they should be allowed to pass,
and arranged a concerted advance of
three columns to crush him. Morgan,
however was too eager and, arriving before the Clans, headed
them back.

Field Service Regulations Chap. VII. tells us that "most careful arrangements must be made to ensure that attacks intended to be simultaneous should be so in reality"

Monk immediately pursued them North and hunted them relentlessly from Glen to Glen. His marches were so extraordinary that the Clansmen themselves admitted that they had not looked for them from mere Englishmen. One of these marches of which definite record exists was 60 miles in 24 hours.

Having harried them for a week he returned to Inverness and sent Morgan to make a diversion on the Royalist Head Quarter at Caithness.

It is typical of his temperament that he gave Morgan a third chance after two successive failures. He evidently realised with Lord Roberts that "In war you cannot expect everything to come out right."

This move was entirely successful. Middleton at once marched South. His move was seen from the English Post of Blair Athol and reported and soon Monk was after him. The chase continued through Perthshire, Badenoch, Athol and Bredalbane. Thence West to Loch Awe, back to Perthshire, where, as Monk had arranged, the enemy ran right into the column under Morgan, and was utterly routed. Morgan took up the pursuit and Monk rested his men.

The destruction of villages, towers and crops, and the disarmament of such tribesmen as could be caught completed the Campaign.

F. S. R. X. 141-2.

The Campaign started in January and was over by August.

The only details that can be dug out of Monk's tactics are as follows:—

- 1. He never moved without a "cloud of Scouts on front and flanks."
- 2. Whenever he halted he formed a perimeter Camp and "The General himself posted all sentries and piquets."
- 3. He never marched after noon unless it was urgently necessary, e. g. During the march already mentioned.

The situation in 1745 forms, in some of its aspects, an interopening Situation.

esting parallel to the situation at the present time.

In the Spring of 1745 the tide of the War with France set in favour of the French, who, after inflicting a severe check on our arms at Fontenoy, took Tournay, surprised Ghent, and

captured Cstend. The Regular Army, strengthened by newly raised units, was for the most part engaged in Flanders. The Troops left in England were mostly newly raised Regiments, in many cases formed of bad material compared to the Units in Flanders, and the Officers were raw and untrained. The service was unpopular and the Bounty for a recruit was £4. Some of these regiments were merely raised as a financial speculation and others by gentlemen who had a keen eye to their own advancement. The shortage of experienced officers led to discipline and skill-atarms being of a very low standard. Such was the quality of the troops on whom we had to rely for the defence of the Country and the replacement of wastage abroad.

The devotion of the Scottish Claus to that ill-starred race, the Stuarts, was recognised by the Government of Louis XV, as offering a good opportunity for the creation of such a diversion near home, as would effectually check the re-inforcement of the forces abroad, and, as the event proved, such expectation was fully justified. Not only were re-inforcements checked, but the British Force in Planders was withdrawn to meet the threat.

To form a fighting force out of a combination of these ragged clausmen has always been a task beyond one of themselves. Only an outsider such as a Montrose or a Dundee could hope to smooth over the mutual loathing of the claus sufficiently to enable them to take the field together.

Such a man was ready to the hand of the French in the person of Charles Edward Stuart. Possessing a very decided charm of manner, intensely ambitious, and firmly convinced of the justice of his father's cause and of its ultimate success when supported by French Gold and French Arms, he was perhaps the ideal leader for men who were devoted to his race, had an inherent respect for a man of birth, and were peculiarly susceptible to deft and tactful handling

Our Forces in Scotland. consisted of 3000 Infantry with a few.

Guns. They were distributed somewhat after the system now in force on the N. W. Frontier. The two posts of Fort William and Fort Augustus on the chain of Lakes together with small Garrisons at Inverness, Blair Castle, and other Posts formed our Outpost Line dividing the Northern from the Southern Claus. In rear of this Line were the Garrisons cantoned in the Castles of Edinburgh and Stirling. In addition to the regular troops there were some independent Companies of pro-Hanoverian Clausmen, in our pay, but officered by gentlemen of their own claus.

The armament of the Infantry was excellent. The Musket which did such execution at Dettingen and Fontenoy, and the Bayonet were all that could be desired in capable hands. The Cavalry were Dragoons, that is to say practically mounted Infantry, armed with Musket and Sword. The Artillery was armed with a six p'r gun. The efficiency and Morale of the troops has already been touched on and it is too melancholy a subject for further discussion. They were not even fully armed in some cases, owing to the demands made by the Armies abroad.

These troops, such as they were, were commanded by Sir John Cope, an able soldier, grown lethargic and rusty through old age and lack of employment. He certainly represented the deficiences of armament of his troops, but events will show that he cannot have taken steps to remedy their poor quality by efficient training. Perhaps it was impossible as his officers were as inexperienced as their men.

Charles landed in July on the West Coast and by the 19th

August had collected 1600 men. An early success was essential to gather recruits and to win over the clans still sitting on the fence. There were two courses open to him. First, to destroy in detail the posts guarding the line of Lochs Lochy and Ness,

thus cutting the line separating the Northern and Southern Clans. Owing to the usual parsimony of Government these posts were few in number, far apart, and owing to their distance and the difficulty of the country between them and stations in rear, difficult to reinforce, except by Sea. Second—To march directly on Edinburgh by Perth, leaving the posts in the rear, which route was sure to produce Stuart recruits, and endeavour to seize the Capital. If successful, such a coup would raise practically the whole of Scotland. Cope heard a rumour, three weeks before the event, of the landing, and recalled all officers to their posts. Lulled into security by this false alarm, it was a week after the actual landing, before he believed it to be true.

F. S. R. X. 141-4.
"Vigorous Offensive".

of overawing wavering Clans. He reinforced the Northern Posts and on August the 19th marched from Edinburgh with 1500 men.

The delay, which was fatal, was due to the difficulties of

F. S. R. X. 141-4. arranging for the subsistence of even so
small a force. We will see then that his
plan was an offensive, but one which was
plan was an offensive, and that he displayed, in addition, both hesitation and
delay.

Three Phases of Cam-

- 1. Hostile Offensive.
- 2. Our Offensive.
- 3. Guerilla Warfare and Settlement.

The first engagement was the ambushing of a detachment of Cope's Troops on the March to Fort William, in a defile.

The troops had taken no protective measures whatever and their muskets were unloaded. This trifling success augmented Charles' foice by 'Vigilance' and 144-2 'Protection'.

The troops had taken no protective measures whatever and their muskets were unloaded. This trifling success augmented Charles' foice by 500 men. Hearing that Cope was marching North, Charles made a forced march

to Corrie Arrack, the worst pass on Cope's road, and awaited his arrival. Cope, on finding the enemy in possession of the pass, did not attack, but turned aside and marched on Inverness,

leaving the road to the South open. From F. S. R. X. 141-4
"Hesitation".
"Retrogade movement."

There is a to Dunbar, arriving there on September 16th. The results of his avoidance of the issue were soon forthcoming. Charles reached Perth on 30th August, picking up recruits all the way, entered Stirling Town and by the 15th. of September was within eight miles of Edinburgh.

The Castle of Edinburgh had an adequate garrison but the
town was defenceless except for two raw
regiments of Dragoons. They were posted
at Coltridge with piquets in front. The piquets were driven in,
in panic, by a few pistol shots, the panic communicated itself to
the main body and the whole galloped off to Preston on the
road to Dunbar. Probably unbroken horses on piquet duty were the cause of this
disaster more than a lack of staunchness in the men.

Charles entered Edinburgh the next day without resistance and, halting for 24 hours, on the following day continued his march South. It is curious that neither the Garrisons of Stirling or Edinburgh made any attempt on the rear of Charles' force, although no troops could be spared by him to mask these forts. True, the townspeople of both places were in favour of Charles, but the overawing of the garrisons by such a fact throws light on their quality.

Meanwhile Cope, having disembarked at Dunbar, moved

Preston-Pans.

Northward, and on coming into contact with the enemy, instead of attacking, took up a position at Preston Pans. The position was strong and his front was covered by a marsh, alleged impassable. In view of

F. S. R. X. 141-7. "Vigilance and Precautions."

this, Cope did not place any outposts. The clans found a path across the marsh, formed up within 200 yards of Cope's Camp and assaulted it, at dawn, as soon as

their dispositions were complete. Cope had time to form line of battle with his Infantry in the centre and Cavalry on the Planks. The Cavalry were routed by the Highlanders who slashed at their horses heads, the men being still unsteady from their previous mishaps. The Infantry, although uncovered on both flanks, held firm, and poured in a destructive fire, but the Clans closed with them and, the men being unskilled with the bayonet, in a few minutes the fight was over. The survivors of Cope's force, only

170 in all, fled to Berwick. General Cope now vanishes from the story, but to give him his due, most of his vacillation and hesitation to attack was due to the exceedingly poor quality of his troops, of which he was aware. The remedy for this lay in his own hands.

Charles now had the choice of pushing on into England or of returning to reduce Edinburgh Casopen to the In the first case, he would probably Tribeamen. have teached London. There were practically no troops in England, and Newcastle was the only fortified place barring the way. On the other hand, half his clansmen had vanished with the plunder of Preston Pans, which had reelothed and re-armed the stauncher half of his force. In view of this circumstance he determined to return to Edinburgh. determined attitude of the Governor, and the timidity of the townsfolk, prevented the reduction of the Castle, but his army was strengthened by the addition of several hundred volunteers, and by the arrival of French and Irish Officers with money, arms and supplies from France.

Meanwhile Cumberland's force in Flanders was recalled and frantic efforts in the recruiting line were made, a bounty of £ 6 being offered for the Guards. Cope was replaced by Handasyde. General

solution ".

R. X. 141-4. " Delay ".

Wade commanded at Newcastle. He was too old for his work and assumed an attitude of masterly inactivity.

F. S. R. X. 141-4. "Delay and Lack of Re-

Continued Offensive.

The rebels, after much bickering, invaded England in two Columns, feinted at Newcastle to occupy Wade, and proceeded to invest Carlisle which surrendered on November 13th. Wade started to relieve Carlisle when it had already fallen, was stopped by a fall of snow, and returned, sending Handasyde

to re-occupy Edinburgh with two battalions of Infantry and a regiment of Cavalry.

The rebels continued their advance, deserted by the clansmen every step of the way, but their situation on December 1st, at Manchester was desperate. Wade was at last moving on them from the North, Cumberland lay before them at Lichfield, and astrong force was concentrated at Finchley

for the defence of London. towards the west drew Cumberland away, Hobility.

and on December 4th the rebels, having passed him, entered Derby. This movement caused a panic in The momentum of the Invasion however was spent, London. and on December 8th the retreat began. 2nd phase.

Cumberland, now at Coventry, started in hot pursuit with 4,000 men but was checked by the rebels' - F. S. R. X. 141-4. "Offensive". reat guard south of Penrith. Wade made no attempt to intercept the rebels, who crossed the Esk unmolested on December 20th and six days Inaction. later occupied Glasgow.

A few days later they marched to Stirling where they were joined by some French troops, and by levies who had been allowed to gather in the North, in spite of Delay. Handasyde's entreaties that they should be attacked and dispersed, from Edinburgh and Inverness. French brought with them a siege train, and Charles, who had now 900 men, laid siege to Stirling Castle.

Cumberland was recalled by the threat of a French Invasion on the South Coast, Wade, was removed, and General Hawley appointed to command in Scotland.

Hawley was a strict disciplinarian and a capable soldier. The State of affairs when he took over State of Army. was appalling. Artillery there was, but no Gunners. The garrison gunners at Berwick and Edinburgh, designed to supply the deficiency, were civilians foisted on the establishment for the sake of their votes. The Infantry was so bad that out of twelve battalions, only three or four thousand men were fit for service. A letter of Hawley's explaining his enforced inaction is interesting. "I hope we shan't be blamed. but it is not the name of twelve battalions Delay. that will do this business. No diligence in me shall be wanting, but a man cannot work without tools. The heavy artillery is still at Newcastle Bad Staff work. 🥆 for want of horses, which were sent to Carlisle for no use. The Major of Artillery is absent through sickness. I suspect his sickness to be a young wife. I know him. I have been obliged to hire a conductor of Artillery and 70 odd men to act as his assistants for the Field Artillery. I was 3 days getting them from the Castle to the Palace yards (about 31 miles) and now they are not fit to march."

Handasyde was quite as outspoken. Writing on November 21st he says. "Everything I have looked into appears more like jobs than to be properly disposed."

After great exertions the force was got ready. It moved to relieve Stirling Castle, and was attacked by Charles at Falkirk on January 17th. It was an indecisive affair and is best described in Hawley's letter to Cumberland. "My heart is broke. I can't say we are quite beat, but our left is beat and their left is beat.....Such scandalous cowardice I never saw before. The whole second line of foot ran away without firing a shot."

Such was the moral effect on young and untrained soldiers

Boral effect of repeated of Coltbridge and Preston Pans. Stern measures were taken, 32 of the foot being shot, and 31 Dragoons hanged. Cumberland was immediately appointed to Command and covered the distance from London to Edinburgh, to take over, in less than six days, arriving on January 27th. He was confronted by a difficult situation. He had to undertake a winter campaign against savages elated by success, in a mountainous country, a task from which most of his contemporaries would have shrunk.

The quality of his troops we know.

Field Service Regulations cite as the requisites for such a

Campaign, self-reliance, vigilance, judgement, discipline, organisation and the training of officers and men in beating the enemy at his own tactics.

Cumberland arrived in Scotland fully determined to obtain just these very qualities. He asked scornfully the meaning of "English Infantry flying before these wild Highlanders" and advanced at once on Stirling, Hawley having made the necessary preparations, with a force in which neither of the two Cavalry Regiments before mentioned were included. The rebels raised the siege and retired on Inverness, leaving their siege train behind them. Cumberland on arriving at Perth was delayed for several days by questions of supply, but employed the time in giving the troops

Study for a Campaign. Special training for the Campaign. He introduced a formation, successfully employed by the Infantry on the right flank at Falkirk, i. e., front rank kneeling with fixed bayonets, middle and rear ranks faring standing. For bayonet work he ordered that each man should engage the clansman on his right, where there was no shield to parry the thrust. Above all he strove by stinging words to bring the morale of the troops up to concert pitch.

On march 1st Charles' army, greatly reduced by desertion and short of supplies, occupied Inverness, dispersing the Garrison, consisting of raw Highland levies.

Another of his parties captured Fort Augustus, but Fort William and Blair Castle resisted all his efforts.

Cumberland remained at Aberdeen throughout March, unable to move through the difficulty of finding transport, and the appalling condition of the roads. During this period his temper rose steadily!

On the 8th April he advanced and on the 15th lay at Nairn, his advanced posts being in touch with the rebels. Charles' officers now besought him to disperse his force and start Guerilla Warfare, but he refused and in spite of the starving condition of his troops, gave battle on Culloden Moor on April 16th, which was exactly what Cumberland wished for. F. S. R.

tells us of the difficulty sometimes experienced when the enemy refuse to offer an organised resistance.

Cumberland having asked half-hearted men to go (" I dont suppose there are any half-hearted men Self Reliance. here, but if there be, I beg them in God's name to go, for I had rather face the Highlanders with a thousand resolute men than ten thousand half-hearted") at-First time our Troops tacked in three lines and, repulsing a attacked. desperate counter attack by his novel F. S. R. X. 141-4. bayonet tactics, utterly broke the rebel Tactical Offensive. army. Tribal dissension handicapped the latter, as is so often the case, and part of their force refused to charge. The Cavalry were launched in F. S. R. X. 142-9. pursuit, and the slaughter of the rebels was great.

The Campaign now degenerated into a series of petty guerilla operations, in which, as regulations lay down, it may be necessary to apply the principle of Military Execution. In the rising of 1715 it was not employed and 1745 was the result. In this case it was strictly applied, and no other rising has since taken place in the country.

Cumberland's reputation as popularly accepted is the work of the other side, and even Lord Roberts was attacked in much the same terms during the Afghan war.

The lessons of the Campaign are:-

- F. S. R. X.

  1. Irresolution, sloth, and a passive attitude are useless.
- 2. Hesitation is interpreted as a sign of weakness, and only increase the enemy's numbers.
- 3. Troops must be carefully trained in the use of their arms, and the tactics of their opponents.
- 4. A vigorous offensive, strategical as well as tactical, is the safest method of conducting operations.
- 5. Principle of hitting the enemy really hard. "You cannot clean a Pigstye with a pen dipped in Rosewater".

### Books Consulted -

"History of the British Army" ... Fortescue.

"Monk" ... Corbett.

### Correspendence.

General Head Quarters, Mesopotamia Expeditionary Force, 7th February 1918.

To:-

THE SECRETARY,

United Service Institution of India,

DELHI.

DEAR SIR,

Allow me to draw your attention to some mistakes which have found their way into my essay, apparently in the process of printing.

- (1) On p. 2, 2nd line "all overseas expeditions" should-read "small overseas expeditions".
- (2) On p.7., 4th line from bottom of page, "it is necessary to expatiate" should read "it is unnecessary to expatiate".
- (3) On p.p. 19 and 20 the two footnotes should change places.
- (2) Above is, of course, a slip obvious to anyone; but (1) considerably alters the sense of what I wrote, whilst (3) attributes to Lord Sydenham a statement which he did not make.

Yours truly, W. F. Blaker. Major R. F. A,

[NOTE.—The above refers to the Gold Medal Prize Essay which appeared in the January 1918, Journal. Ed.]

# REVIEWS OF BOOKS. The Military Map (Additional Chapters).

ELEMENTS OF MODERN TOPOGRAPHY (FRENCH SCHOOL OF WAR).

PART II.

Translated from the French by "G. M." (Macmillan & Co., Ld.)
PRICE 3s.

It has long been recognised that scenery is to a considerable extent but an expression of the geological formations which lie below the surface of the earth, Such works as "The Scenery of England" and "The Scenery of Switzerland", by Lord Avebury, treat of this subject. For instance, the exquisite scenery of the Tyrol is in; a large measure due to the Dolomitic formations which weather in a peculiar and characteristic way. We have noticed that certain Swiss views bear a striking resemblance to scenes in the Himalayas, due to the similarity of the lime-stone formation in each case which, in weathering, assumes the same kind of shapes. The expert geologist, when he views a mountain range, can make a fairly good guess from its external appearance at the nature of the underlying formations and the kind of movements that have taken place beneath the surface. that we may say there is a connection between the topography or the shape of the earth surface in any particular area, and the geological formation below.

The idea at which this book aims of instructing those who have to portray the features of the earth's surface during the process of map making, in the nature of the forces and influences at work shaping those features, is undoubtedly a good one. While there are several books in French dealing with this subject we do not remember having come across one in English before. After describing in general terms the various ways in which the earth's crust has been folded and crumpled, under the stresses to which it is subject, the author attempts to formulate certain rules governing the shapes which the surface might assume under the influence of rain and wind and other causes which lead, by demidation, to the moulding of the surface. As an example, the way in which an ideal homogeneous area might be crumpled up and then cut into valleys and ridges is described. Unfortunately—a fact which the author notes—the crust of the earth is seldom or never homogeneous, so that to all general rules there are numbers of exceptions. Water, the most potent agent 'in carving out the surface features, in finding its way to the sea may, and generally does, meet a variety of obstructions which cause its path to deviate

### Reviews of Books.

from the shortest course. Rocks, owing to their varying hardness and composition, are not equally denuded under the same forces, thus causing the ground to assume a multitude of shaps and forms which no rules could settle. Never-the-less we think the aim of the book is a good one for it tends to interest the young topographer in his work and prevents him from making gross errors by depicting impossible features, i.e., features which the ordinary laws of nature would not tolerate.

We have had no opportunity of consulting the original, but we fancy the language in which it is written is simple and suitable for the beginner. This makes it all the more regrettable that the translation into English has been so badly done. A much too literal rendering has been attempted. We think a free translation, provided it conveys the exact meaning of the original, is what is needed in a work of this kind. The phraseology is awkward, to say the least of it, and the translation of certain well known terms is positively misleading. For instance to render the word versant, which occurs frequently throughout the book as "watershed" is quite incorrect. A watershed, though it sounds as if it might be, is not an area but a line—the line where the waters part. Versant, as the context shows, should be translated by "catchment area". Such misuse of terms, this being only one example, tends to add confusion to an already obscurely written book, which is very much to be regretted. The expert will probably know what is meant, even though terms be misapplied, but an elementary book of this kind is not intended for the expert but for those who wish `to become experts.

It might be inferred that the translator himself has no very clear idea of the English meaning of the terms he employs. We can imagine that very lucid writer M. E. de Margerie, whose works are quoted, being horrified at such a production. Messrs. Macmillan, the publishers should see that it is rewritten before another impression is taken. There is, at the present time, a tendency to bring cut any book with a Military title without a very close examination of its merits. We may sum up this book by saying that the ideas it contains are good but the presentation of those ideas is bad.

In "The Motor-Bus in War" (T. Fisher Unwin, 5) Lieutenant Beatson records the impressions of an Assistant Supply Column Officer during two and a half years on the western front with a Mechanical Transport Unit, which happens to have constituted the supply Column to an Indian Cavalry Division.

#### Reviews of Books.

The author joined up as an Officer of the New Army in October 1914, and within a month found himself at a railhead near Bethune, taking part in the rationing "in the field" of a complete division of Indian Cavalry, for the first time in history in Europe, and for the first time anywhere by means of mechanical transport.

Very readably is presented, without any unuecessary technical detail, a description of the duties of such a Supply Column, and how they are carried out.

Beyond the fact that half the motor lorries of the convoy had formerly pursued the more prosaic destiny of conveying, in the guise of London 'buses, passengers to and from Putney or Kensal Rise and other places of interest in the Metropolis, the volume contains little direct reference to motor 'buses as such, though the title is none the less apposite, and, incidentally, constitutes a tribute to the remarkable service given by these vehicles under conditions vastly differing from those for which they were originally designed.

Peregrinations necessitated by changes in the location of the Division introduced the author to many of the towns behind the battle front whose names have become historic. Impressions of the roads, the inhabitants, the British, French and Indian troops, the devastation caused by the Hun, of "strafes" and craters, æroplane duels and the thousand and one incidents in the common round of this link in the chain of supply services, which connect up the seaport bases with the fighting troops in the trenches, are recounted, showing vividly that life in the "Army behind the Army" may be anything but dull.

The book will be read with interest by very many who have not seen these things for themselves, and by soldiermen in other branches of the service, who care to learn more about the working of a mechanical transport convoy, than a casual acquaintance with the operations of so familiar an adjunct to a modern army in the field may have conveyed.

## United Service Institution of India.

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supplied with the Journal, an annual payment of Rs. 8, in advance, will be required.

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All papers must be written in a clear, legible hand, and only on one side of the paper All proper names, countries, towns, rivers, etc., must, when in manuscript, be written in capital letters. All plans must have a scale on them.

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with the provisions of A. R. I., Vol. II., para. 487, and King's Regulations, para. 453.

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3. The reading room of the Institution is provided with all the leading newspapers, magazines, and journals of military interest that are published. War maps are on view in the Reading Room, with the positions of the troops, so far as is known, marked with flags, in each theatre of war.

4. There is a well-stocked library in the Institution, from which members can obtain books on loan, free. Suggestions for new books are solicited, and will be submitted to the Committee. Books are sent out to members V. P. for the postage, or bearing **by** zailway.

5. The Institution publishes a Quarterly Journal in the months of January, April, July and October which is issued postage free to members in India and to all life members; but ordinary members wishing to have their journals sent to any address out of India must pay in advance Re. 1 per annum to cover foreign postage charges.

6. Members and the public are invited to contribute articles to the Journal of the Institution for which honoraria will be awarded by the Executive Committee. Rules for

the guidance of contributors will be found on the opposite page.
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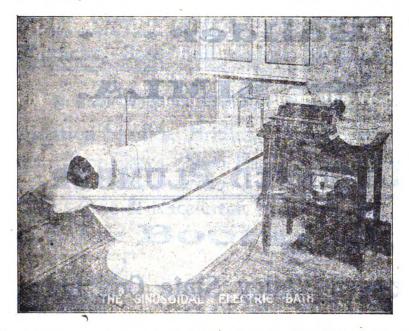
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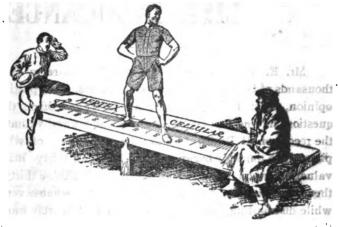
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2. The following awards are made annually in the month

of June:—

(a) For officers—British or Indian—a silver medal.

(b) For soldiers—British or Indian—a silver medal, with Rs. 100 gratuity.

3. For specially valuable work a gold medal may be awarded in place of one of the silver medals, or in addition to the silver medals, whenever the administrators of the fund deem it desirable. Also the Council may award a special additional silver medal, without gratuity, to a soldier, for special good work.

4. The award of medals is made by His Excellency the Commander-in-Chief as Vice-Patron, and the Council ofsh ex United Service Institution, who were appointed administrator of

the Fund by the MacGregor Memorial Committee.

5. Only officers and soldiers belonging to the Army in India (including those in civil employ) are eligible for the award of the medal.*

6. The medal may be worn in uniform by Indian soldiers on ceremonial parades, suspended round the neck by the ribbon issued with the medal.

Note.

(i) Personal risk to life during the reconnaissance or exploration is not a necessary qualification for the award of the medal; but in the event of two journeys being of equal value, the man who has run the greater risk will be considered to have the greater claim to the reward.

(ii) When the work of the year has either not been of sufficient value or has been received too late for consideration before the Council meeting, the medal may be awarded for any reconnaissance during previous years considered by His Excellency

the Commander-in-Chief to deserve it.

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(With rank of Officers at the date of the Award).

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1890...YOUNGHUSBAND, Capt. F.E., King's Dragoon Guards.

1891...SAWYER, Major H. A., 45th Sikhs.

RAMZAN KHAN, Havildar, 3rd Sikhs. 1892...VAUGHAN, Capt. H. B., 7th Bengal Infantry.

JAGGAT SINGH, Havildar, 19th Punjab Infantry.

1893...Bower, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).

FAZALDAD KHAN, Dafadar, 17th Bengal Cavalry.

1894...O'SULLIVAN, Major G. H. W., R.E.

MULL SINGH, Sowar, 6th Bengal Cavalry.

^{*} N. B.—The terms "officer" and "soldier" include those serving in the British and Indian armies and their reserves; also those serving in Auxiliary Porces, such as the Volunteers and Corps under Local Governments, such as Prontier Militia, Levies and Military Police, also all ranks serving in the Imperial Service Troops.



# MacGregor Memorial Medallists—contd.

1895...DAVIES, Capt. H. R., Oxfordshire Light Infantry. GANGA DYAL SINGH, Havildar, 2nd Rajputs.

1896...Cockerill, Lieut. G. K., 28th Punjab Infantry. GHULAM NABI, Sepoy, Q. O. Corps of Guides.

1897... SWYAYNE, Capt. E. J. E., 16th Rajput Infantry. Shahzad Mir, Dafadar, 11th Bengal Lancers.

1898... WALKER, Capt. H. B., Duke of Cornwall's Light Infantry. ADAM KHAN, Havildar, Q. O. Corps of Guides.

1899...Douglas, Capt. J. A., 2nd Bengal Lancers. MIHR DIN, Naik, Bengal Sappers and Miners.

1900...WINGATE, Capt. A. W. S., 14th Bengal Lancers. GURDIT SINGH, Havildar, 45th Sikhs.

1901...Burton, Major E. B., 17th Bengal Lancers. SUNDAR SINGH, Colour Havildar, 31st Burma Infantry.

1902...RAY, Capt. M. R. E., 7th Rajput Infantry. TILBIR BHANDARI, Havildar, 9th Gurkha Rifles.

1903... MANIFOLD, Lieut.-Colonel C. C., I.M.S. GHULAM HUSSAIN Lauce-Dafadar, Q. O. Corps of Guides.

1904...Fraser, Capt. L. D., R.G.A. MOGHAL BAZ, Dafadar, Q. O. Corps of Guides.

1905...Rennick, Major F., 40th Pathans, (specially awarded a gold medal).

MADHO RAM, Havildar, 8th Gurkha Rifles. 1906...Shahzada Ahmad Mir, Risaldar, 36th Jacob's Horse. GHAFUR SHAH, Lance-Naik, Q.O. Corps of Guides Infantry.

1907...NANGLE, Capt. M. C., 92nd Punjabis.

SHEIKH USMAN, Havildar, 103rd Mahratta Light Infantry. 1908...GIBBON, Capt. C. M., Royal Irish Fusiliers.

Malang, Havildar, 56th Punjabi Rifles.

1909...Muhammad Raza, Havildar, 106th Pioneers.

1910...Sykes, Major P. M., C.M.G., late 2nd Dragoon Guards (specially awarded a gold medal).

TURNER, Capt. F. G., R.E.

KHAN BAHADUR SHER JUNG, Survey of India.

1911...LEACHMAN, Capt. G. E., The Royal Sussex Regiment. GURMUKH SINGH, Jemadar, 93rd Burma Infantry.

1912...PRITCHARD, Capt. B.E.A., 83rd Wallshjabad Light Infantry (specially awarded a gold medal).

WILSON, Lieut. A. T., C.M.G., 32nd Sikh Pioneers. MOHIBULLA, Lance-Dafadar, Q. V. O. Corps of Guides.

1913...ABBAY, Capt. B. N., 27th Light Cavalry. SIRDAR KHAN, Sowar, 39th (K.G.O.) Central India Horse. WARATONG, Havildar, Burma Military Police (specially awarded a silver medal).

1914...BAILEY, Capt. F. M., I.A. (Political Dept.) MORSHEAD, Capt. H. T., R.E. HAIDAR ALI, Naick, 106th Hazara Pioneers.

1915.. WATERFIELD, Capt. F. C., 45th Rattray's Sikhs. ALI JUMA, Havildar, 106th Hazara Pioneers.

1916...ABDUR RAHMAN, NAIK, 21st Puujabis. ZARGHUN SHAH, Havildar, 58th Rifles (F. F.) (Specially awarded a Silver Medal).

1917... MIAN AFRAZ GUL, Sepoy, Khyber Rifles.

# United Service Institution of India.

# PRIZE ESSAY GOLD MEDALLISTS.

(With rank of Officers at the date of the Essay).

1872...ROBERTS, Lieut.-Col. F. S., v.C., C.B., R.A.

1873...Colouhoun, Capt. J. A. S., R.A.

1874...Colouhoun, Capt. J. A. S., R.A.

1879...St. John, Maj. O. B. C., R.E.

1880...BARROW, Lieut. E. G., 7th Bengal Infantry.

1882... MASON, Lieut. A. H., R.E.

1883...COLLEN, Maj. E. H. H., s.c.

1884...Barrow, Capt. E. G., 7th Bengal Infantry.

1887...YATE, Lieut. A. C., 27th Baluch Infantry.

1888... MAUDE, Capt. F. N., R.E.

Young, Maj. G. F., 24th Punjab Infantry (especially awarded a silver medal).

1889...Duff, Capt. B., 9th Bengal Infantry.

1890...MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.

1891...CARDEW, Lieut. F. G., 10th Bengal Lancers.

1893...Bullock, Maj. G. M., Devonshire Regiment.

1894...CARTER, Capt. F. C., Northumberland Fusiliers.

1895...NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.

1896...BINGLEY, Capt. A. H., 7th Bengal Infantry.

1897...NAPIER, Capt. G. S. F. Oxfordshire Light Infantry.

1898... MULLALY, Maj. H., R.E.

CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).

1899... NEVILLE, Col. J. P. C., s.c.

1900...THULLIER, Capt. H. F., R.E.

LURBOCK, Capt. G., R.E., (specially awarded a silver medal).

1901...RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.

1902... Turner, Capt. H. H. F., 2nd Bengal Lancers. 1903... HAMILTON, Maj. W. G., D.S.O., Norfolk Regiment.

BOND, Capt. R.F.G., R.E., (specially awarded a silver medal).

1904...MACMUNN, Maj. G. F., D.S.O., R.F.A.

1985...Cockerill, Maj. G. K., Royal Warwickshire Regiment.

1907...WOOD, Maj. E. J. M., 99th Deccan Infantry.

1908...JEUDWINE, Maj. H. S., R.A.

1909...Molyneux, Maj. E. M. J., D.S.O., 12th Cavalry.

ELSMIE, Maj. A. M. S., 56th Rifles, F. F., (specially awarded a silver medal).

1911...Mr. D. PETRIE, M.A., Punjab Police.

1912...CARTER, Major B. C., The King's Regiment.

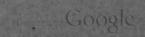
1913... Thomson, Major A. G., 58th Vaughan's Rifles (F. F.)

1914...BAINBRIDGE, Lieut.-Col. W.F., D.S.O., 51st Sikhs, (F.F.) NORMAN, Major C. L. M.V.O., Q. V. O. Corps of Guides (specially awarded a silver medal).

1915...No award.

1916...CRUM, Major W.E., V.D., Calcutta Light Horse.

1917...BLAKER, Major W. F., R. F. A.



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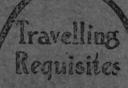












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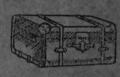
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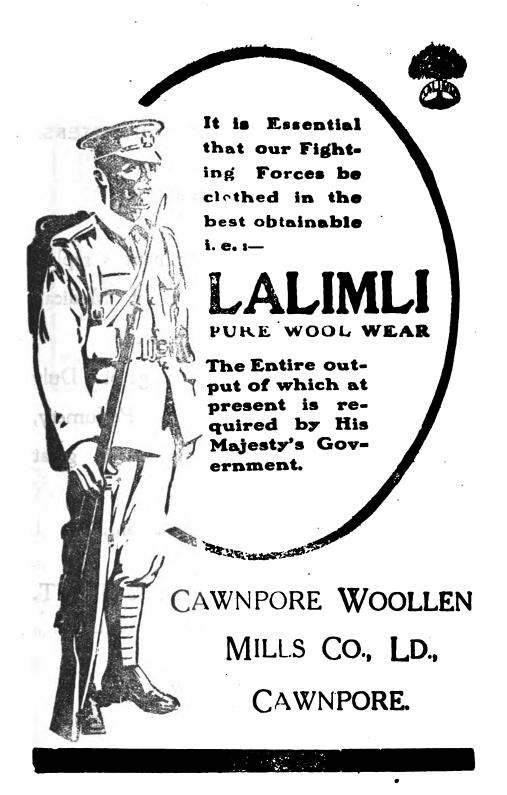
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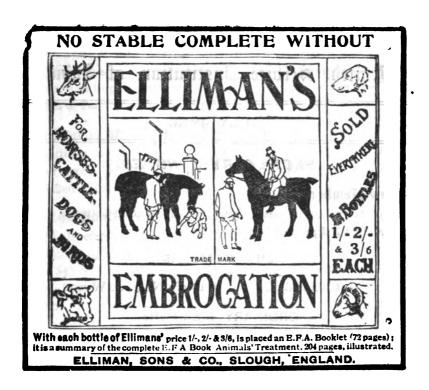
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# Anited Serbice Institution of India.

### JULY 1918.

### SECRETARY'S NOTES.

## I.—New Members.

The following members joined the Institution between the 1st March and 24th June 1918 inclusive:—

### LIFE MEMBERS.

Lieut. H. V Collinridge.

Captain N. F. J. Wilson.

### ORDINARY MEMBERS.

Major C. H. A. Tuck.

2/Lieut. A.W.W. Holworthy.

Major G. Benson-Cooke.

Captain W. B. Venters.

2/Lieut, K. G. Mitchell.

A. J. W. Kitchin, Esq.

Brig. Gen. G. N. Cartwright.

Captain R. N. Pocock.

Captain B. C. Scott.

Lieut. C. O. Gaby.

Lieut. C. McConway.

Captain V. H. Ghabot.

Captain H. P. O'Shaughnessy.

Captain G. B. Newton.

Captain R. P. Munro.

Captain J. H. Dobson.

Lieut. Colonel W. D. Smiles.

J. B. Remington, Esq.

Major A. Taylor.

Lieut. E. C. J. Gahan.

Captain F. S. Poynder.

Captain A. St. J. Wright.

Brig. Gen. Sir H. W. Perry

Lieut. Col. J. E. Tennant.

Lieut. Colonel R. Verney.

Major H. Garbett.

# II.—Tactical Problems.

In order to assist officers working for tactical examinations, the Institution has schemes with maps for issue to members only, at Rs. 5 each, which includes criticism and a solution by a qualified officer; or without criticism, Rs 2-8-0 each. 26 schemes are now available.

# III.-Maps.

The Institution has for sale a variety of large scale maps (1 and 2

inches to one mile), price As. 8 each.

They are specially useful for instruction in map reading, tactical schemes and in preparation for examination, and can be had either of English or Indian country.

# IV.—Premia or Articles in the Journal.

Articles accepted for publication in the Journal are paid for, and a sum of approximately Rs. 400 is awarded for articles and reviews published in each Quarterly Journal.

### V.—Contributions to the Journal.

With reference to Army Regulations, India, Volume II, paragraph 487, and King's Regulations, paragraph 453, as amended by Army Order 340 of 1913, intending contributors to the Journal of the United Service Institution of India are informed that action to obtain the sanction of His Excellency the Commander-in-Chief to the publication of any article in the Journal of the United Service Institution of India will be taken by the Committee. Contributors are, therefore, responsible that the sanction of their immediate superior has been obtained, and this should be noted on all articles sent for publication. Articles need not be submitted in duplicate.

Contributors must have their articles either typed or printed.

# VI.—Library Catalogue.

The library catalogue revised up to 1st January 1916 is now available. Price Rs. 2 or Rs. 2-4-0 per V.P.P. A list of books received each year is published with the January Journal.

# VII.—Gold Medal Prize Essay 1918-19.

The Council have chosen as the subject for the Gold Medal Essay for 1918-19 the following:—

The duties and organisation of the Indian Army after the War and its relation to the British Army.

The following are the conditions of the competition:

- (1) The Competition is open to all gazetted officers of the Civil administration, the Navy, Army Air Force and Indian Defence Force who are members of the U.S.I. of India.
- (2) Essays must be printed or type-written and submitted in triplicats.
- (3) When a reference is made to any work, the title of such work is to be quoted.
  - (4) Essays are to be strictly anonymous. Each must have a



motto, and enclosed with the essay there should be sent a sealed envelope with the motto written on the outside, and the name of the competitor inside.

- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1919.
- (6) Essays will be submitted for adjudication to referees choses by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of a successful candidate will be announced at a Council Meeting which will be held in September or October, 1919.
- (8) All essays submitted are to become the property of the United Service Institution of India absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays should not exceed about 15 pages of the Journal when printed, exclusive of any appendices, tables or maps.

# VIII.—War Maps.

War maps are on view in the Reading Room of the Institution with the positions of the troops, so far as is known, marked with flags, in each theatre of War.

# IX —Amendments to Rules of the U. S. I. of India. Para 3.

(a) Regarding additional subscription of Rs. 5-0-0 per augum for all members of the Institution resident in Simla is cancelled.

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# United Service Institution of India.

## GOLD MEDAL ESSAY COMPETITION 1918-19.

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- (4) Essays are to be *strictly anonymous*. Each must have a motto, and enclosed with the essay there should be seut a *sealed* envelope with the motto written on the outside and the name of the competitor inside.
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- (9) Essays should not exceed about 15 pages of the size and style of the Journal, exclusive of any appendices, tables or maps.

By order of the Council.

SIMIA, 30th Juna 1918 G. AIRY, MAJOR,

Secretary, U.S. I. of India.



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# The Journal

# Anited Service Institution of India.

Vol. XLVII.

JULY 1918.

No. 212.

# THE OARD INDEX IN MILITARY OFFICES

BZ

CAPTAIN G. L. GROVES,

1-4th Bn. The Queen's Regiment.

The following article is written from the standpoint of the Company Commander of a British Infantry regiment, and points in connection with the interior economy of such a unit are cited as examples of the application of the principles which it sets forth, but these principles are no less applicable to artillery and cavalry, of the British or Indian services, or indeed, more broadly, to the office of any military unit or department which has to do with the filing of general information and records of any kind.

Military offices are naturally unable, through lack of capital and other considerations, to make use of all the methods and appliances of a modern business firm, though typewriters, duplicators and the like are now universal wherever much correspondence has to be undertaken. But even did the facilities exist I doubt very much but that military offices would be the last to adopt new methods and labour saving devices, either from a natural conservatism in such matters where older systems have served their purpose well enough or through the somewhat natural difficulty of a new idea or appliance getting popularised and its merits and uses understood.

A system against the adoption of which none but the last—named objection can be urged is that of the Card Index. It is one of ever-growing popularity and increasingly widespread adoption in modern business. It is a system of extreme simplicity, nominal cost and unlimited adaptability, making unnecessary the

use of a large number of ledgers, letter books and record books of various kinds, and this with increased efficiency in those departments of office work in which it supplants its cumbersome predecessors.

I will endeavour, in the following pages, to indicate some of the many uses to which a card index may be put in military office First of all, what is a card index? It is probably familiar to many in the form used for library catalogues and that is the form generally typical of all. Briefly, it consists of a tray or drawer with cards standing vertically therein and each containing certain information, such as, in the case of a library catalogue, the name of a book, of a subject or of an author. All the cards containing information which can be classed under any one heading are grouped under a "guide card" which is usually a card of distinctive colour having a tab projecting above the tops of the other cards. On this projecting tab can be written the subject or heading under which all the cards to which it is a guide are grouped. Thus we should find books on wild flowers in the group indicated by the guide card "Botany", those on the Differential Calculus under" Mathematics", and so on, while, if the catalogue contained, as it would if it had any pretensions to completeness, a classification by authors we should expect to see a guide card allotted to Sir Walter Scott followed by cards for "Ivanhoe", "Old Mortality" and so on, and that for John Ruskin by "Sesame and Lilies" and other of his works. far the card index would not appear to possess any great advantage over a printed catalogue. But each of these cards could be made to contain useful subsidiary information as to the edition, size, number of copies, etc of the work in question which would be confusing in a catalogue. Moreover, and herein lies one of the great secrets of success of the card index system, in the case of additions to the library a new card can be inserted in its proper place at once; or, in the case of a book being lost, its card can be immediately extracted, neither of these operations upsetting the index or detracting from its appearance as would be the case with the printed form. In short, the card index can be added to

or subtracted from without limit because each piece of information which it contains is a separate unit and can be moved at will.

The card index is kept compact by an adjustable block sliding in the bottom of the drawer and clamped in any desired position, or by some such similar means. If the index swells to such an extent that it cannot be housed in one drawer only, a second can be added, or a complete cabinet of drawers can be bought in the first place if conditions are likely to warrant such a course.

The special use of the system for military office work will now be considered and I hope I may be excused if, for the sake of giving concrete examples from working practice, I indicate how it is applied in my own Orderly Room.

Every man has one card allotted to him and it is made out as shown in Figure 1 which shows the actual size of the card employed. Referring to a special card which is placed at the beginning of the index and shows how the data contained in those that follow are arranged, we glean the following information with regard to No. 270569 Lance Corporal James Kirkby:—

He is in No. 12 platoon or "C" Company. He was made a Lance-Corporal with effect from January 16th of last year by Battalion Order No. 150 of the 18th of the same month. By trade he is a carpenter. His religious denomination is Wesleyan. He enlisted on the 5th of August 1914 and his age on enlistment was 23. He is a single man, arrived in India on the 4th of December 1914, and was born on March 27th 1891. Then follows the address of his next of kin and finally, at the bottom of the card, come certain particulars which require to be recorded periodically. These show that he was a second class shot on his 1915 classification and has been a first class shot subsequently. Since the 4th of January 1916 his medical classification has been Ai, it having been B previously. On the 5th of August last year he was granted one good conduct stripe.

These are the particulars to which I find that reference is most constantly required and which can be kept up to date or amended as required far more easily than if they were contained in the contracted columns of an A B 70 or similar register. Moreover, in these days of drafts, in and out, any roll of this kind soon becomes anything but a credit to the office unless it be constantly re-written, even when the regulation four blank lines per men are left for subsequent additions. It will be noticed that information which can be obtained from the current Pay and Mess book, such as rates of Proficiency Pay: or Allotment, is not included, such being always up to date and easily available.

So much, then, for the particulars given on the face of the man's card which can, of course, include just such details, similar to or additional to the above, as may be required in different units. The greater advantage of the card index depends on the next feature of its employment. drawer contains some dozen or more guide cards of distinctive The tabs of these are labelled with such items as Company Employ, Regimental Employ, Extra Regimental Employ, Signal Section, Hospital, Lewis Gun Section, Mesopotamia, Courses, Furlough and so on. Those officers (there are cards for officers as well as other ranks) N. C. O's and men not actually available for duty in the station are therefore grouped under one or other of the guide cards, always in alphabetical order in the case of privates and in order of seniority in each rank in the case of officers and N. C. O's. The cards of those actually available for duty naturally comprise the largest section and come first in order, the sequence of the other groups being merely a matter of choice. When any man's card is taken out of one section and placed in another, an entry is made on the back showing the cause of its being placed there, with an opening date; on its removal from that section a closing date is shown. To make the matter quite clear we will examine the entries on the back of Lance-Corporal Kirkby's card, considered previously. They run as shown in Figure 2.

By entries such as these a complete record of a man's movements, employment, sickness, furlough, etc is automatically obtained: the value of the record cannot be over-estimated.

The cards which come in the first group (of those available for duty in the station) form a kind of perpetual parade state and are of great use as such to the Company Sergeant-Major and Orderly Sergeant who normally have to depend on a written distribution roll which soon either becomes illegible or has to be made out afresh, the latter being no small labour in a large company.

As to the upkeep of the index. This is made the particular duty of one clerk and his duty only. In my own office the correspondence clerk has the job as I find he is best able to keep in touch with moves, changes in employment and so on, and he corrects the index up to 8-0 a. m. daily from his own information (gleaned from correspondence), sick reports, casualty reports and the like. He soon gets to know exactly where every man's card is and the actual keeping of the index up to date does not occupy five minutes a day.

Behind this first general index comes another in which is a card for every Warrant Officer, N. C. O. and man in the company as before, but endorsed with his number, name, platoon, date of enlistment, and date of arrival in India, only. These are entered as near the top as possible and the remainder of the card, back and front, is devoted to forming a clothing register. The Company Quartermaster-Seigeant keeps lists in which every article of kit and equipment is given a number in a section lettered according to the general class of the items contained in it. Thus a serge tanic is B3, a pair of puttees B6, a pair of boots B9, a mess tin C4, a bed strap D8, a washing bowl D9, and so on. If Lance-Coiporal Kirkby is issued on August 1st 1917 with a pair of drill trousers, a mess tin cover and a pillow case, we find the entry on his card as follows:—

# 1st August 1917, B2, C5, D1.

This system obviates the use of clothing ledgers altogether, and is just as effective. A surprising number of entries can be made if they are entered neatly in small characters, and when a

card is eventually used up it is filed under a guide card for "completed cards" and a new one placed in the body of the index.

Another section in the cabinet (which holds some eight hundred cards in all) is reserved as an index to Battalion Orders. This record used to be kept in a book and was merely a summary of orders having a permanent interest, posted, as in a ledger, to their various headings such as dress, discipline, institutes, routine. Using a card index in place of a book, cards in alphabetical order bear these headings and on the cards grouped behind them is entered a one-line precis of the order with a reference to its number and date as it originally appeared. The system saves an incalculable amount of time and enables any order whether of a week's or two years' standing to be turned up at once.

There is still one more index in my cabinet. This is a kind of perpetual diary for returns and other periodical duties. divided into two portions, a weekly and a monthly one. In the first are guide cards for each day in the week and in the latter for each day in the month, or as many days as have some particular duty or return connected with them. To take two or three examples. Behind the guide card for Friday, in the first portion of the diary, are several other cards. The first reminds me that a programme of training is to be rendered to the Battalion Orderly Room by 12 noon; shows the last order on the subject and refers to any correspondence or other memoranda affecting this particular return. I, perhaps, have no need of any of the particulars—only of the mere reminder—but they may be of great use to any officer who has to take over the Company in my absence, possibly at short notice. Other similar cards refer to the rendering of duty states and minor offence reports on this same day. Yet another shows that a report is due to me from the Company Second-in-Command in connection with ammunition expenditure for the past seven days. Another that platoon commanders are to be warned of what special duties, e. g. giving of lectures, etc., they will be responsible for during the coming week, and so forth. In the case of the monthly diary the system is precisely similar. For instance, under guide card 30 and

31 (the two are combined to allow for thirty day months) is one to show that a musketry progress return must be prepared, another that permanent passes must be endorsed, etc. The use of such an index is obvious and its advantage over the typed or written roll of "periodical returns" which usually finds a place on the wall of every office needs no labouring.

The uses of the card index system which I have indicated above are only a few of a great number to which it is equally applicable and to those who would know something more of its possibilities I commend an excellent little book. "The Card Index" by G. C. Mares, published by Partridge & Co. at a price (in India) of one rupee. There will be seen particulars of card indexing correspondence and accounts, for neither of which I use the system in my own Orderly Room but which would certainly be far more easily and efficiently dealt with by such methods in some bigger offices which daily cope with twenty times as much work, perhaps, as does a double company in a week.

The same book discourses on the relative sizes of cards. I would advise anyone purchasing a cabinet for the purposes I have suggested to get one to take cards four inches by six, which is the medium size of those usually employed, though for special purposes the three by five or the five by eight sizes might be found more suitable. On service the complete card index would be an impracticable thing to carry about but the whole of the cards of the first index considered in the article, that is to say the one containing all the particulars of services, etc, would only occupy, when suitably boxed, a space of some four and a half by six and a half by four inches, and this could certainly be accommodated somewhere, even with the most stringently economical scale of transport.

The only difficulty which I experienced when the index was first introduced was to get my N. C. O's. to make full use of it. But these difficulties were soon overcome and I can confidently commend a card index on the lines I have indicated as a valuable asset to all who take a delight in the sound and efficient running of their offices.

270560	Dto Kirkhu James	C. 12.
270569	Pte. Kirkby, James. ~	
Carpenter.	I Cpl. (16.1.17) B.O.150—	18.1.17.
w.	•	23.
	5. 8.14.	
s.	4.12.14.	27.3.91.
	•	
	Mrs. Kirkby, (Mother).	•
3 Li	ster Road, Sutton, Surrey, Engl	and.
		•
in the second		
i de la companya de La companya de la co		•
	1.3.17. Al.	
,		
1917 I.	5.7.16. Al.	
1916 I.	4.1.16. Al.	
1915 II.	17.6.15. B.	5.8.16. I.

Figure 1.

12.4.15.	Garrison Police, Lucknow.	20. 6.15.
30.2.16.	Hospital, Nowshera.	13. 3.16.
27.3.16.	S. S. O's Office, Peshawar.	1.10.16.
1.6.16.	Furlough.	30. 6.16.
15.4.17.	Drill Course, Kuldana, 1st Class.	15. 5.17.
1.6 <b>.1</b> 7.	Furlough.	15. 6.17.
15.8 <b>.17</b> .	Recruit Instructor, (Drill).	
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Figure 2.

# KUT AND KASTAMUNI

BY

LIEUT. H. C. W. BISHOP, I. A. R.O.

We arrived back at Kut, after the retreat from Ctesiphon, on the morning of December 3rd, but the Turks did not come close enough to be unpleasant till 3 or 4 days later, giving us time to dig in to some extent unhindered. By the middle of December however, the Turks were dug in within 100 yards along most of our line. We expected an attack every day for the first ten days, especially at nights, but the Turks made no real effort until the 24th December, when after a heavy bombardment of the town and fort they attacked the latter, which was being held by the 17th Brigade under General Hoghton. The Turks succeeded in entering one Bastion of the fort but were then driven out; they came on again, however, later in the day and at mid night were still in possession of the part they had entered. They, however, found it was untenable and had evacuated the whole ground again by the following morn-The Turks had very heavy casualties amounting to 2000 during this attack, whereas ours were 400. They, fortunately for us, had no high explosives or Kut would very soon have been a mass of ruins. Another advantage we enjoyed was in the number of their shells which never exploded.

The last people to leave Kut were the Cavalry Brigade who got out on the morning of December 6th over the boat bridge. This bridge was blown up on December 9th by Lt. Mathews of the Sappers, accompanied by Lt. Sweet in charge of a covering party of Gurkhas. Both these officers were recommended for V. Cs for their exploits but eventually received D. S. Os. The 16th Brigade took turns with the 30th in the trenches to the west of the Fort, this part of the line being called the N. W. Section. When not in the trenches the Brigade was in bivouac near Kut but always suffered as many casualties in bivouac as in the front line. This was due to the number of falling bullets which used to come over from all directions. During the first few days of the siege the Relieving force was expected by the

New Year and at the end of December we thought we were certain to be out of Kut by the 10th January. Trench Warfare went on until the 21st of January when the front lines on both sides were flooded out by the rapid rise of the river, the Turks having to evacuate a great net work of trenches, whereas on our side we had to fall back to what was known as the Middle Line some 300 yards behind our original front line. After this retirement life was very much pleasanter since there was now such a great distance between the Turkish outposts and our front line.

Khalil Pasha told General Delamain, after the siege was over, that he was preparing to launch an overwhelming attack on Kut when the floods arrived and frustrated his intention. He said he was prepared to lose 10,000 men in the attempt.

By January 13th we were down to half rations. On January 25th the General's famous communique was issued in which he stated that there was ample food in Kut for another 84 days not including the 3000 animals; actually the siege went on for 94 days but the rations could scarcely have been considered ample. However the General stated that he expected relief in the first half of February and none of us ever thought we should finish the 84 days in Kut. In February we began eating horses, camels and mules. Camel was said to be extremely good but I did not try any myself. Mule, however, I can strongly recommend in preference to horse. By March the 19th bread rations had dropped to \frac{1}{2} lb. and by April 10th all ranks were down to rations of 5 oz bread or meal. aeroplanes fed us for 3 or 4 days at the end, and it was a great treat to get a little white bread although it was only 4 oz each and did not go very far. In addition to this the 2 days reserve and - emergency rations which every unit had in is possession were made to last for 4 days. During February and March our energies had been devoted to Flood Protection Works. Quite a big Bund had been made and, as a second additional protection, a further higher level Bund was made by Arab Labour close round Kut.

For the last mouth all ranks were getting extremely weak and there were a great many cases of collapse due to want of food. Some of the sights in the Hospitals were dreadful, a number of the Indians simply being reduced to mere skeletons. Sentries for the last month were allowed to stand with their Bandoliers and Belts on the ground at their feet. It is wonderful what satisfaction can be got under such circumstances from simply imagining a good meal.

Great excitement prevailed in Kut whenever an effort to reach us was to be made by the relieving force and this was especially the case on March the 8th. Several schemes had been got out for our participation when the Turks had been got on the move. During the attack on the Dujailah Redoubt by General Aylmen's Force, we could clearly hear machine gun and rifle fire. They were only 7-8 miles distance from us but unfortunately this was the closest they ever came.

One of the wants which was felt more than anything else during the siege was the absence of letters Aeroplanes from the relieving force were flying above us nearly every day and we used to wonder why they could not drop us a few letters. It is true that the Staff had received some of theirs, but most of us had had no news from our people for 8 months, when we got the first letters on our arrival in Anatolia. A few newspapers dropped to us in February described Kut as an "advanced post being held by General Townsend, where General Aylmer proposed to join forces with him at an It looked to us as if no one recognised in early date". India or at Home that we were besieged and we were consider-The wireless was a great comfort to able hurt at the idea. us, as not only were messages sent out each month to our Depots and thence out to our relations, but Reuters telegrams were received every day and published, and this gave us something to talk about besides the everlasting subject of rations and specula-, tious as to the date of relief. The worst frightfulness to which the Turks treated us was undoubtedly the bombs dropped from their aeroplanes. On one occasion a bomb was dropped on the British Hospital and 32 sick were killed outright or wounded. After the failure of the attempt on the 8th March, all horses not

wanted for food were slaughtered to save their grain allowance. The last effort to help us was the splendid attempt made by the "Jalnar" to run the gauntlet with a month's food into Kut. She was commanded by Commander Firman, and Cowley her own skipper was also on board. That night, intense firing could be heard as she made her way up stream and then suddenly ceased; we then knew that there was no hope. One of the crew who was afterwards a prisoner in Kastamuni told me that she had broken through one cable but was pulled up on a second. Commander Firman thinking this was a saud bank left the protection on the bridge to tell them to take a sounding and was immediately killed. Cowley then took charge but was mortally wounded very soon afterwards by a shell, from which he died after being taken ashore. The "Jalnar" remained for half an hour trying to get past this cable but had to give it up in the end.

During the last few days we had great hopes of being all allowed to go back to India on parole, not to fight the Turks again, and the General's last Communique stated that he expected to arrange this.

Whilst this communique was being read out in our mess dug—out, another message was brought in countermanding it, and it was then clear that German counsels in Constantinople had decided that we must go into captivity. We still hoped that the Indian Troops would be allowed to go down stream since we knew that the Turks had the greatest difficulty in feeding their own men quite apart from any large number of prisoners.

I think it is possible to exaggerate the suffering of the Garrison while in Kut, but I fear it is not possible to realise what the Troops had to endure during the march into captivity and during the months spent working on the Turkish Railways.

From Kut we moved up to the Turkish Camp at Shamran, the troops having to march. While they marched, a sweeper trudging behind his Regiment made a very deep salaam to some German officers, who promptly clicked their heels and returned the salute in the most correct manner. On arrival at Shamran we were given Turkish biscuits which are terribly hard and indigest-

ible, being made from barley. Also we were able to buy, during the following days, a few dates and oranges. A barge with food was brought up from the relieving force, containing also a number of gifts and mess stores which were a great joy to receive. We were allowed to bring tents from Kut and these made our stay at Shamran a great deal more comfortable but we had to leave them behind when we went on towards Baghdad. At Shamran the sickness continued and it was especially heavy amongst the British ranks being apparently increased by the sudden increase in rations. The Indians, however, seemed to manage things better in this respect.

While at Shamran we wrote a number of letters which the Turks promised should be allowed to go down stream, but none of these reached Home. The first group of officers, including the Generals, left a few days after we arrived, General Townsend having preceded them on a small launch on his way to Baghdad. Our men were next to leave and it was a sad sight seeing them go. They had no transport whatever and had to carry every thing they wanted.

The second group of officers left on a steamer on May the 10th, only the sick and a number of doctors being left behind. On the way up to Baghdad the "Jalnar" was passed. showed signs of the heavy fire she had gone through, being covered with bullet marks. Now she was bringing the sick up from Kut and had also picked up a number who fell out as the men marched on towards Baghdad. The Turks had provided an escort of cavalry for the men and had promised that any falling out should be picked up by camels. Actually what happened was that any man falling out was flogged to see if he could possibly stagger along further. On the 4th day we, in the second group of officers, reached Baghdad and were landed at the old British Residency, where we formed up and were marched through the Bazaar up to the Cavalry Barracks on the other side of the town. These barracks were as filthy as all Turkish buildings and in place of the furnished quarters which the Turks had promised us on the way up, we found some bare floors where

we had to make ourselves as comfortable as we could. The following day 2 or 3 officers succeeded in getting out and paying a visit to the American Consul. He did every thing he possibly could to help them. He said that had we realised the fate now in store for the troops we would have cut our way out of Kut whatever the cost. At the time we thought he was exaggerating but events proved only too well the truth of his assertion. On the return of these officers the Turks were furious that they had succeeded in seeing the American Consul and refused to let any other officer go near him.

While in Baghdad we were given a month's pay and most fortunately for us half of this was in gold. Had this not been so, we should have had a very much harder time on the march, since no Arab would look at Turkish paper money in these days. About this time the Russians were making their raid from Kermanshah and had reached Khanikin. Some of the Turkish underlings were evidently scared and thought the Russians would reach Baghdad. They accordingly began to change their tone towards us making out that they had always been our greatest friends. From Baghdad we were taken to Samarra by train and there camped in a square enclosure.

We marched from here on to Mosul, starting 3 or 4 days later, but unfortunately for us the amount of transport consisting of donkeys and mules only turned out to be half of what the Turks had promised us. We were provided with an Arab Gendarme escort and set off in a dust storm at about 7 o'clock one evening to the cries of "Yallah, Yallah" (get on). At midnight we encountered a rain storm and an hour or two later, thoroughly worn out, bivouacked by some dirty water, which nevertheless we drank. At dawn we were again on the move and reached Tekrit at one o'clock thoroughly worn out. It was a march of over 30 miles from Samarra and for most of us the first march since the siege. At Tekrit we were made to camp on the stony bank of the river which was a filthy spot, and the Arabs increased our discomfort by strolling about where we were lying, and generally behaving in an offensive manner. We decided that,

unless we could get more transport, we should never get through to Mosul if the Turks insisted on marching us along at the rate they had started. Luckily we succeeded in getting some extra animals and the first arrangement was that one lira in gold should be paid in advance and a second ou arrival at Mosul. But when our commandant heard of this he insisted that the 2 liras in gold should be paid on the spot, so that he could take his share before starting. With these extra animals we were able for the rest of the journey to ride for one hour out of every two. ing the rest of the trek we had to be very careful, specially at nights, to hide our boots, as these were stolen, whenever opportunity offered, by our escort. Two days after leaving Tekrit we started on a long waterless march which we understood would take us two nights and a day before reaching the river again. We found a spring however containing water which was drinkable although not being by any means pure. There are a great number of springs in this part of Mesopotamia impregnated with salts of various kinds. We drank at one time or another a good deal from these sources but fortunately without any ill effects. We reached the river again at Shergat which in the old days was Assur, the original capital of the Assyrian The foundations of the buildings are still visible but no carving or inscriptions remain.

In order to frustrate the efforts made by our gendarmes to raise the price of eggs and other necessities, so that they could make the difference in commission, we had formed a trade union and decided how much we would pay for eggs before reaching the various villages on the march. This worked very well and saved us a great deal.

On the 10th day we reached Mosul which lies rather in a cup. The Valley is green with crops and cultivation, whilst the down land stretches away on every side, with the mountains of Kurdistan forming a fine back ground to the scene.

After 2 days at Mosul we left, this time with carts for transport and having hired a few extra in addition. The first 100 miles lay through treeless country where

there was little water. We then passed through a district where there were a number of deserted Armenian villages, and our guards told us the inhabitants had all been massacred, but exactly when this occurred I do not know. After the halt for a day at Nisibin we reached Ras-el-ain. Most of the doctors with our party were left behind here to attend to the Indian troops on their arrival, as the latter were to work at continuing the Railway from this point. All Hindu orderlies and servants were taken from us here. We had accomplished the 200 miles from Mosul in 10 days but we went on by train to Aleppo, a journey taking about 12 hours. In Aleppo we were taken to Hotels but were not allowed out for nearly 24 hours to get a meal; fortunately we got some rolls and fruit from vendors in the street. After 2 days in Mosul we went on by train to Islahie.

Whilst in camp here we noticed a party of peasants, including women and children, being marched up the road. Our guards said that these were Armenians who were being moved off to make room for the troops from Kut who were to take on their work on the Taurus Tunnels. The same evening we set off, and whilst marching up the pass, passed 3 or 4 bodies of men who had been shot and left by the side of the road. These were evidently members of the party we had seen and were probably the strongest and those likely to give most trouble. Our guard declared that all the others would be marched into some waterless district and kept there until they died. The following morning we found them in Camp on the opposite slope to where we were Soon after our arrival they moved off but bivonacked. exactly what fate overtook them it was impossible to say. the further side we again reached the Railway at Mamoure and, after a short journey passing through Adana, reached Kulek Boghaz, the station from which a journey across the main Taurus Range had to be performed. The transport across this section was being effected by German motor lorries, and punctually to the minute a number of these arrived the following morning and we set off. About half way the Germans had put up an elaborate camp including work shops for

each different make of lorry, and this they called "Camp Taurus". The total distance across was over 40 miles. We reached the rail head on the further side at a little place called Bozanri; here we found a few naval prisoners from the Dardanelles at work on the Railway. At the time they were being well paid for the work they were doing and apparently were fairly happy. We were not however allowed to speak to them beyond a few words in passing. Later on, when the troops from Kut arrived, the conditions in the camps in this neighbourhood became appalling and a great many of our men ended their lives in sickness and misery, thanks to the want of all organisation and care by the Turkish authorities.

Our next halt was at Konia where we were allowed a day's rest. Here we found a large hotel run by a French woman, who could not do too much for us, and we were all much indebted to her kindness.

Continuing our railway journey next day we reached Eskichehir: all Mohammadan servants we had were left here. We found a number of Indian Mohammadan officers who had come up with the first party; they were being well treated and were living in very good houses. Up to this point we had believed that Angora was our destination, but now heard that there was another 10 days by road in front of us after arrival there. Next morning we reached Angora and were taken a mile beyond the town to a big building which had originally been an agricultural College: here we found the first party of officers, who had not been having a pleasant time, since they had been strictly confined to the building. Fortunately we managed to get this altered so that we could cook outside and go down to a stream to bathe. Two: days later the first party left for Yuzgad, a place in the centre of Asia Minor and over four thousand feet above sea level. We followed a few days later but took the road to We had carts as transport for the first two days and were then given donkeys for the next two marches to Changri. A small donkey with only a loading saddle is

anything but comfortable and it is almost as tiring to ride as to walk and drive the animal in front of one. After passing a very desolate stretch of country we turned the corner of a valley and came into full view of Changri, a small town stretching up the hill sides with trees and cultivation spreading round it in the valley. There was an agreeable commandant here and he brought a Municipal deputation to make a formal call upon us. Much to our delight we were given carts again, instead of donkeys, at Changri and thus completed the next 3 marches to Kastamuni. On the way we had to cross a high pass where the scenery was most magnificent and reminded one of the pine woods round hill stations in India. As we were proceeding along the top of a ridge, we suddenly came in sight of the town in the valley below, spreading round the foot of a high rock on which were perched the ruins of an old castle. We were escorted into the town by a number of the local gendarmes and taken to our quarters, which consisted of houses previously belonging to the Greeks; here we found ourselves each in possession of a bed and settled down for a long rest after our strenuous journey.

The commandant of our Camp was an ignorant old fellow and had been a farmer in the Caucasus. He always looked the picture of misery, wearing an overcoat the whole year round with his trousers trailing along the ground and goloshes several sizes too big for him. He would take offence in extraordinary ways and or one occasion confined Major Stewart S. and T. Corps to his rooms for a fortnight, for laughing at the local fire engine. It is impossible to describe the apparel of the average Turkish officer, since one hardly ever sees two dressed in the same way. As a rule Turkish officers shave on Thursdays, have good manners, and make all sorts of promises which they never have the least intention of carrying out.

Besides the Commandant we had to have an interpreter. This was a Greek, a double faced black-guard who was finally got rid of. We then got 2 fellows who were a great improvement; one of these had been a Turkish naval cadet just before the war.

The Turks used to put up all sorts of rules and after obeying them for a day or two we generally did as we For exercise we started pleased and they never objected. playing football of a modified Rugby type the ball being a Soccer case stuffed with tow, this being all we had at the time. Later on proper footballs arrived from home and we continued to play rugger and soccer, most of the year round. We were allowed also to go for walks, but always with an escort of 2 or 3 Turkish soldiers. We could go to the Bazaar and to the Turkish baths of which there were a large number in different parts of the town. Letters reached us in about a month from home but often we would not hear for 2 or 3 weeks at a time. The parcels had at first arrived in 3 or 4 months but took longer and longer, and in August 1917 no parcels despatched in the previous January had yet turned up, the reason for this being that they are held up in Vienna where they are apparently transhipped. There were very few cases in which parcels which had arrived were known to have been tampered with.

The climate in Kastamuni was exceedingly fine being very dry, the height above the sea being roughly 2500 feet At the end of 1916 prices of provisions began to rise rapidly and this in conjunction with the depreciation of paper money made living very much more expensive through the summer of 1917. The situation must be even worse at the present time and there is no doubt that all food which can be sent in parcels from Home or India will be of the very greatest services to the officers and men still in Turkey. The Turkish paper money includes 2½ and one piastre notes which contain pictures of the Dardauelles and Kut respectively. These were only just published before Kut was recaptured by us. In May and June last year additional orderlies reached us from the men's camp at Angora and Kara Hisar. They brought terrible tales of the mortality during 1916 at the various working camps on the Taurus and from what we could gather no more than a of the British ranks who left Kut were still alive. We were never allowed to correspond with other camps and therefore knew nothing definite. Rumours in the Bazaar were always prolific specially amongst the Greek shop keepers. The Turks however never believed them and to this day the majority of the Turkish country population is in ignorance of the fact that Baghdad is now in our possession. are received by the country people whatever, except from their relations who write as prisoners from Burma. We could tell fairly well the state of affairs on the various European fronts from a Turkish paper, the Hilal, the French edition of which we used to obtain from Constantinople. This paper is a German publication, and consequently one had to read between the lines to get a correct idea of what was happening. Telegrams were also received in Kastamuni every day and this gave the Turkish scholars some practice in translation. They naturally gave a totally one sided and false account of everything. Some officers started activities by setting up as carpenters and others as bootmakers; we had a Library which, after books had been received from home, became quite extensive. A long series of Lectures were organised and it was wonderful the amount of talent found in this connection. A debating society was also formed but this did not have a very long life. The greatest triumph however was the formation of an orchestra which after two or three months numbered no less then 16, some violins and clarionets had been found in shops in town, and Messrs. Bampton and Munro two clevel. A.R. officers manufactured 2 cellos and a double base and made a great success of these instruments.

Early in 1917 a new commandant arrived. He was a cheery fat little man and spoke German so that we could therefore dispense with an interpreter. He was extremely keen on the orchestra and began inviting a few of the local Greek and Armenian ladies to turn up and sing. On one occasion there was a little dancing and the commandant promised many more ladies for the following week. Unfortunately this sort of thing was too good to last. Someone evidently told

tales of him behind his back to Constantinople, with the result that everything was suddenly squashed and our liberty curtailed in all directions. The commandant was too weak to stand on his own legs and protest, and a few weeks later was deported altogether. The new commandant had not arrived before we left.

During the first two months we received gifts through the American embassy from the Red Cross. The first consignment was of thin clothes which were much too small and very few officers succeeded in getting in to the trousers. Later on more clothes arrived; these were thick things for winter and were of the greatest service to us.

While in Kastamuni 3 officers and 3 orderlies died and were buried in a little cemetery high up on the hill side above the town, adjoining the slope used as a grave yard by the Greeks and Armenians. The officers were Lt. Reynolds of the 103rd who died a few days after we reached Kastamuni from the effects of the siege and the march up, Lt. Lock I.A.R. who succumbed to peritonitis two or three weeks later and Commander Crabtree R.N.R. who had arrived in an unconscious condition in a cart from Augora. He had been in command of a patrol steamer which struck a mine off the Adana coast. He was ill when he left Angora and a journey in a springless Turkish cart over these roads was almost sure to be fatal. It was really a pure case of murder. Over the graves we put crosses of wood but these were promptly stolen by some fanatical Turkish peasants and we then had to put large slabs of stone over the graves, the names being carved on crosses on these. Round the little cemetery we built a wall and a number of officers spent several hours on work every day for weeks during the summer of 1917.

After much discussion it was eventually decided that four of us would make an attempt to escape. Our plan was to strike the coast near Baffra, steal a boat and make our way to Trebisonde, keeping just in sight of land. It was necessary that the party should therefore contain one member with sailing experience. In our case this was Captain Tipton of the Flying Corps; the others were Captain Sweet 2-7th. Gurkhas, Lt. Keeling I. A. R. and myself.

We got out from one of our houses into a side lane being assisted by an orderly who was in the habit of going out at night disguised as a Turk. Several other officers helped us and we successfully accomplished our departure. We set off across country but the going was very hard being up and down the whole time. We were however not followed and persisted in a North-easterly direction for the next 10 days picking up a certain amount of food from the crops and vegetables in the fields. We also carried a light sail which we had made, some rope and an axe head, in case we should find a boat without mast or sail. We were also armed with a pass port written out by one of the best Turkish scholars amongst the officers in Kastamuni. This described us as Germans who were surveying and requested that the utmost facilities should be given us. It was signed with the name of the Army Commander at Angora and a suitable seal appended. We took fezzes but wore old Khaki uniform without badges.

At the end of 10 days as we found we had not got nearly as far as we had hoped, it became necessary to walk by day and we had therefore to start posing as Germans and buying food openly at small hamlets while avoiding all larger places. This was most successful and our first host was a sergeaut who had fought against In 14 days we reached the coast but unfortuus in Gallipoli. nately the following morning, while proceeding along the shore, to investigate a boat which we had seen the night before, we passed a sentry standing inside a tumbled down boat house. We were unsuccessful in bluffing the sergeant of this guard and had to accompany him to a small town near Jerse. Here we nearly succeeded in getting through on the supposition that we were Germans, but unfortunately had to throw up the spouge, when confronted with a Turkish Colonel whose suspicions were at once aroused. Captain Tipton meanwhile had been put on the telephone to a German officer at Sinope but, beyond saying "Sprechen sie Deutsch" several times, could think of nothing and had to throw down the telephone saying it was out of order. A few days later we were. being marched across the mountains 20 miles from the coast

on our way back to Kastamuni. Our Guard consisting of a sergeant and 8 men were suddenly surprised one morning by firing from the side of the road. One was killed, 2 wounded and they threw down their rifles. Within 2 minutes our rescuers who were adherents of the old Turk party had disarmed them all. They had decided, rather than serve in the Turkish Force to leave the country, forfeiting all their property and proceed to Russia. They had heard of our capture and decided to rescue us. They were great sportsmen, keenly pro-British and probably thought we would help them on their arrival in Russia. We were hiding with them for nearly 4 weeks in the woods and mountains before they could obtain a boat and we then crossed over with them, reaching Alupka at the south of the Crimea after a voyage of rather over three days. The moment they began firing on our escort, Captain Sweet thought no doubt this was a golden opportunity for again getting away and must have dashed off down the khud, never waiting to see what was to happen. When we found that they were really our friends we shouted for him and made the old guard look round the hill sides but we could see no trace of him and finally had to leave him to his fate. Our friends heard that 2 or 3 days later he had been re-captured and was being escorted back to Kastamuni with, they declared 60 gendarmes. He was taken to Angora, and after a month in prison there, was sent to the officers' Camp at Yozgad.

From Alupka we went to Sebastopol taking our Turkish friends with us; here they were well treated by the Russians and we left them in good hands. Until we reached Russia they had refused to take any money from us; they were in fact sportsmen and gentlemen in all their behaviour towards us and could not have done more, while we were with them, for our comfort. After staying a week or two in Russia, Captain Tipton and I reached home by Sweden and Norway at the end of October, Keeling following 2 months later. Captain Tipton returned to duty almost at once and after a great deal of trouble obtained permission to fight over the German lines in France but died early in March as a result of wounds received while flying. His death will be a

great blow to all those who knew him in Turkey and at home. He was always cheerful and, although unwell and in pain for most of the time on our journey to the coast, he stuck to it and refused to give up. Another officer whose death is a great loss to all who knew him is Major Corbett. He died at Changri a few months ago, and was one of the officers who helped us in our escape. He had acted as staff officer at Kastamuni for one of the two groups into which we were divided, and his loss will be felt severely by all those still living as prisoners in Turkey.

# FURTHER NOTES ON THE SUN, MOON AND STARS.

By J. WILLOUGHBY MEARES F. R. A. S.

The writer has been asked to continue the notes published in the Journal of the United Service Institution for October 1917, No. 208. He fondly imagined that his previous instalment was simplified to such an extent that every reader would be able to follow the explanations given, but it appears that some difficulties were encountered. While proceeding with new matters one or two points will be further elucidated. Incidentally it has been suggested that the advice as to the choice of stars for night marching, and some of the other cognate matters mentioned, would find a useful place in the "Manual of Map Reading", which at present offers very little guidance on subjects with which the sailor is already, the explorer must be, and the officer should be familiar.

#### Finding the time.

Mention has already been made of the use of the sun and the compass for finding the "local time" at any place, and of the corrections necessary for finding Standard Time. On dry land the astronomer checks the accuracy of his clock by means of the As stated earlier, the successive arrivals of a star on the meridian occur at perfectly regular intervals of a sidereal day. Therefore a telescope (known as a transit instrument) is mounted on trunnions so that it is free to move only vertically, and it is fixed to travel only in the meridian—due North and South. In the eyepiece are 5 or 7 vertical spider lines, exactly spaced, and the exact time of a given star passing each line? (as the earth's rotation carries it past the meridian) is recorded. mean of these results, which will individually be accurate to the order of a tenth of a second, is the time of transit of the centre wire. The star tables give the actual time, so in this way the error of the clock is found. Standard astronomical clocks cannot be expected to keep exact time, nor is this necessary so long as the rate of gaining or losing is uniform; their hands are seldom altered, as it is as easy to correct for an error of an hour as of a minute, and the operation of altering the hands would upset the rate for days. The accuracy however is such that astronomical observations made in different parts of the world will, when reduced to a common basis, agree within a fraction of a second.

A rough but serviceable transit instrument may be made by fixing a very fine wire exactly vertically and using a fine pinhole or slit in a piece of metal to observe through, the two components being fairly in the plane of the meridian and 8 or 10 feet apart. A bright star, suitably placed, will then be momentarily occulted every 23 H. 56 M. 4 S. This will enable the rate of any ordinary time-piece to be checked to within a few seconds, without any tables. If the correct time is once obtained from the telegraphed time signal it can be found again by simple arithmetic. When the star chosen has passed the meridian in daylight another can be chosen, and Whittaker's Almanack will give the exact time interval of transit between the two—assuming the observing wire to be truly vertical.

At sea the position of the observer as well as the time is found astronomically. The ship's chronometers, of which several are usually carried, enable Greenwich mean time to be read off, so long as their rates are known and constant. Observation of the altitude of the sun at noon gives the latitude, while the sextant also determines the occurrence of local noon. The difference between local time and the Greenwich time of the chronometers then gives the longitude, as explained in the previous article. To check the accuracy of the chronometers, which are naturally less reliable than standard clocks on solid earth, the moon offers her aid. Her movements among the stars are rapid, and the Nautical Almanack gives her angular distance from certain bright stars, during all the days she is visible, together with the exact Greenwich time of the occurrence.

#### Phases of the moon.

A rule was given in the earlier paper for finding the moon's age, and some particulars were added as to her phases

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and their aspect. In particular the statement that "the rising crescent moon, a few days before new moon, must have the illuminated face towards the North, but now on the left of the picture of the Eastern morning sky" proved a stumbling block to some attentive readers. It appears hardly known that the waning morning moon is crescented; but this is the fault of late risers, not of the moon. The remedy is to rise with the muezzin some 4 or 5 days before new moon; most people see the moon beginning to wane soon after full, and it must be obvious that this goes on until she has waned to nothing at new moon. However, the following further explanation may assist in clearing the ground.

Let the observer stand in the sun holding a white tennis ball at arm's length, to represent the moon. Ry slowly turning round in a circle he can see the whole succession of phases, eclipses etc. It will be as though he were alone in space where the earth is, with the real moon revolving round him, except that he can shorten his lunar months to a few seconds. Clearly when the ball-or moon-is exactly in the opposite direction to the sun it will be wholly illuminated on the side facing the observer; the condition and effect corresponding to full moon. If however the observer's head (representing the earth) is then in such a position as to shield the sun's light from the ball, either wholly or in part, there will be a total or partial eclipse of the moon, which obtains its light entirely from the sun. It is obvious that unless all these three bodies are in a straight line in this order there can be no lunar eclipse. Sometimes at full moon this condition is realised; at other times it is not; but a lunar eclipse can only occur at full moon.

If, on the other hand, the ball is practically in the line of the sun, at the opposite end of its circle or orbit, the illuminated face will still exist but the observer will not see it: the side pointing to him will get no ray of direct sunlight, and the condition will be that of new moon. It is true that the ball can still be seen, while the new moon is ordinarily quite invisible, but the explanation of this may for the moment be deferred. Now in these conditions, if again the three bodies are in a straight line, the ball will wholly or partially obscure the light of the sun, casting a shadow on the observer's face. This constitutes a total or a partial eclipse of the sun, as the case may be. Only at new moon precisely can this occur, just as only at full moon can there be a lunar eclipse.

Bearing in mind that half the ball (or the moon) is always illuminated and the other half always dark-or in shade in the case of the ball—and that in these two extreme positions the observer sees either all or none of the bright hemisphere, it will be evident that at intermediate positions a greater or less amount of the bright part will be visible. If the reader wil take the trouble to make the experiment the "phases of the moon "will then be apparent to him. At points midway between the extremes just half the bright part will be seen, corresponding to the half-moon seen at the first and last quarters, already explained in the earlier article. These occur at about the 7th and 21st days from every new moon. Intermediate between this position and that of full moon, i. e. just before and after the 14th day, there will be a bulge instead of a straight cut segment of light, the appearance known as a " gibbous " moon.

On either side of the new moon position the observer will only get a peep at the bright hemisphere from round the corner, and this will be crescented like the young evening moon or the waning morning moon; the bright crescent will, naturally, be on the side towards the sun. It is hoped that this difficulty, of the young and the old moon, will now disappear.

Here it may be as well to explain that in the ball experiment, the reason why the part not directly illuminated is still visible is due to diffused daylight reflected off the surroundings and the sky. Why then is the "dark" portion of the moon's disc ordinarily invisible? Its faint visibility from earth-shine was explained in the earlier article; but, except for this, it is invisible because no other light than faint star light is

illuminating it. The moon has no atmosphere, no water, no clouds: and therefore neither diffused daylight nor twilight. These are purely atmospheric effects on the earth, and are non-existent on the moon. An observer on the moon would see the stars at noon in a black sky, with the sun among them, but no glare except for the sun's coronal atmosphere: if he went into the shadow of a rock he would as it were be in black night, although looking out into blazing sunlight. The smallest telescope will show these black shadows, which are real and not merely contrast effects. It may be men. tioned, parenthetically, that as the moon rotates on her axis in the same period that she revolves round the earth, only one aspect of her is seen; the aspect of the further side is entirely unknown to the astronomer, except for a fraction that is made visible by periodical libration—a movement it is unnecessary to explain here.

#### Recurrence of eclipses.

Having now explained how eclipses are caused it should be mentioned that the occurrence of one at any particular full or new moon is no mere matter of chance. If the paths of the moon round the earth and of the earth round the sun were exactly in the same plane there would be an eclipse every fortnight, whereas there can never be more than seven nor less than two in a year. Actually the two paths in question are inclined at an angle to one another, so eclipses only occur when full or new moon happens to take place at the point of intersection of the two paths or the "Node". As the celestial movements are all very regular—even in their apparent irregularities—it follows that there is a regular sequence in the occurrence of eclipses. The period of 18 years and 11 days, known as the Saros, was familiar to the Chaldeans; after this interval eclipses recur in the same sequence. This is of assistance in calculating forward or backward. most months the new moon passes just above or below the sun, quite invisibly, and the full moon passes just above or below the cone of the earth's shadow, escaping eclipse. Occasionally she grazes the half shadow or penumbra, and a small sector is dimmed without being partially eclipsed. The penumbra can be seen at the edge of every shadow cast by the sun or any source of light that is not a mere point.

#### Lunar eolipses.

It will be realized from what has been written above that the earth cuts off the sun's light and casts a conical shadow for a considerable distance behind in space, reaching in fact beyond the moon's distance. Into this shadow the full moon plunges at times of total eclipse. The space between the two bodies is void of material substances, for the earth's atmosphere only extends a few hundred miles from the surface. Therefore within this cone there is no ordinary diffused light to illumine our satellite. This statement however requires qualification, for a small amount of the sun's light is bent or refracted inwards by the earth's atmosphere round the edge, and reaches the eclipsed moon in a glow like that of sunset. Hence the blood red moon so often seen during totality. The eclipse is visible from every part of the earth where the moon is above the horizon. An observer on the moon would see the black disc of the earth hiding the sun, with a brilliant ring round the limb due to the illumination on clouds and particles in the air.

Reference is made above to refraction of the sun's rays by air; the phenomenon is of course more obvious in water, causing a stick partly immersed to appear bent. If any object is put into a tumbler at such a height that the rim just hides it, and water is then poured in, refraction will render it visible. Now the refraction of the atmosphere is of such amount that when the sun or the moon appears to an observer just to touch the horizon the whole disc is in reality just below it; the light has here to travel through a great distance in the air and is bent up about \frac{1}{2} a degree. This proved a great obstacle to the ancients, who believed eclipses of the moon to be due to the earth's shadow; for if an observer is so situated that a total eclipse occurs just at

sunset both the sun and the eclipsed moon will be visible above the horizon simultaneously for a few minutes. Pliny records an observation of such an eclipse, and Cleomedas was the first to offer the true explanation, by the analogy of the experiment just mentioned.

#### Solar oollpses.

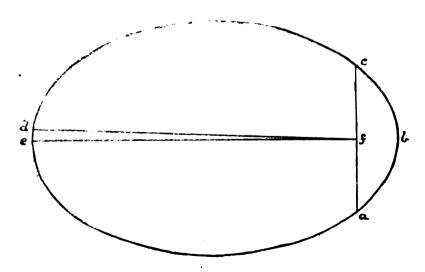
When new moon occurs at the node she passes directly between us and the sun, and eclipses him. Now in the previous article it was mentioned that the apparent angular diameters of the sun and moon are about the same. But as our distance from both varies so the apparent diameters change. Consequently at the time of an eclipse the moon's disc may be a little smaller or a little larger than the sun's. Assuming that the bodies are exactly in line (otherwise there would only be a partial eclipse) the former condition gives an "annular" or ringed eclipse, a minute amount of the sun's disc being visible all round the black disc of the moon. The latter condition gives a true "total eclipse" such as occurred over a strip of Northern India in 1898. At such times only the outlying atmosphere of the sun, the gorgeous red flames and the delicate corona, are seen; these are ordinarily invisible owing to the atmospheric glare; the brighter stars and planets also become visible. Astronomers will travel over the globe to witness the phenomenon, for apart from its intrinsic beauty and interest it offers unique opportunities for settling difficult questions of solar physics. Unfortunately as so much of our globe is covered by water the eclipses of longest duration of totality (they vary from a few seconds to about 7 minutes) occur over the Pacific Ocean or some equally useless zone. As the moon is far smaller than the earth her shadow does not cover the earth even in the most extensive total eclipse. It merely covers (at any moment) a small circle, within which alone the eclipse can be witnessed as a total one. North or South of this the eclipse is only partial. The shadow-circle however travels along, as the moon continues her movement, and so the eclipse is.

in the course of the day, visible over a long and narrow strip of the earth.

### Planetary mevemonts.

In any popular article on astronomy (or any other scientific subject for that matter) it is very difficult to avoid making misstatements for the purpose of simplifying the subject to a beginner. This may be illustrated by the movements of the moon and the earth. As a first approximation we may say (as was long believed) that the sun is in the centre of the solar system; that the earth revolves uniformly in a circle round it; and that the moon similarly revolves uniformly in a circle round the earth. This however is far from being true. Imagine the circle stretched out to an oval or ellipse, and the centre of it similarly drawn out or separated into two points along the long axis. Such a path is more nearly that of the earth round the sun; and the sun, instead of being in the centre of the oval, is at one of these drawn out positions called the foci. Similarly the moon may be said to revolve in an ellipse with the earth at the focus. But here again there is inaccuracy. If the sun were infinitely large and the earth infinitely small, and no other body existed, it would hold good for them. Actually however the movements, obeying Newton's law of universal gravitation, are more complicated; for while the earth tends to revolve round the sun, the latter tends (in an immeasurably less degree. owing to his great mass) to revolve round the earth; the upshot is that each body is actually revolving in an ellipse round the common centre of gravity of the two. This applies also to the earth-moon system, and here the masses are more nearly comparable, as the movement of the earth in obedience to the pull exerted by the moon is very considerable. All the planets also travel round the sun under similar laws, while themselves attracting the sun and each other, thus causing irregularities in each other's paths or "perturbations". Consequently the actual movement of any single body is most complicated. For instance, apart

from his actual movement in space or proper motion, the sun is simultaneously endeavouring to move in an ellipse round each of the points representing his common centre of gravity with each planet, so that his actual movement is a combination of all these. Now when a planetary body-say the earth—is at the point in her ellipse where she is nearest to the sun she travels faster than when she is further away. Two forces are acting at one and the same time. As the earth is travelling forward at some 20 miles a second her tendency is to continue, in accordance with Newton's first law of motion, to travel forward in a straight line: but the force of gravity exerted by the sun meantime causes the earth to fall in towards the sun. These two tendencies so balance as to give the actual elliptical path, and as the gravitation fall inwards increases so does the centrifugal force outwards of the orbital velocity increase to balance it. The result is expressed in the law that the radius vector (or line joining the two bodies) sweeps over equal areas of space in equal times. Comets offer the best illustration of this law, as they travel in very elongated ellipses, some of them almost grazing the sun before sweeping off beyond



the orbits of the outer and most distant planets. At the nearest approach to the sun their velocity is inconceivably great, and they will swing round the sun, from East to West, in a few hours. If the area thus swept out, at a distance of only a million or so miles from the sun's centre, is lengthened out until the radius is thousands of millions of miles long the arc at the end of it will be very minute, and the velocity will be about that of a freight train.

In the figure f is the focus, and the areas a b c f and d e f are equal, so a body travelling in this path would take as long to go from d to e as from a through b to c.

(In the diagram the areas are not equal, owing to an error; but the point is illustrated).

# Jupiter's eolipses.

Solar and lunar eclipses conveniently situated for observation are not very frequent, but there are others which are of more practical use to the amateur. Thus the planet Jupiter is provided with a very large retinue of moons or satellites, of which the four largest may be seen in any small telescope. Sometimes these pass behind the disc of Jupiter and are "occulted", or pass in front of it and are seen projected on his disc, together with their shadows cast by the sun. They are also frequently eclipsed in the giant shadow of Jupiter—a body of 10 times the earth's diameter and as the shadow seen from the earth generally projects sideways these eclipses may, at the right seasons, be seen to occur a long way from the planet's disc. The times when they will occur are published in many journals-including Whittaker's almanack—and offer a useful method of finding the time, with the corrections explained in the earlier article. The eclipses of No. I satellite are especially reliable in this respect. It is interesting to note that owing to our varying distance from Jupiter, and the fact that light only travels at the modest rate of 186,000 miles a second, the intervals between succeeding eclipses as seen from the earth vary to the extent of several minutes. These apparently

anomalous variations in fact gave the first measure of the velocity of light. Despite its vast speed, compared with our ordinary conceptions, if every "fixed star" in the heavens were suddenly blotted out completely no change whatever would be noticed by us for at least 3 years, and very little change in 20 years; for most stars are at a greater distance than is represented by the travel of light for that time, so they would continue to shine for us. Proctor pointed out (some 30 years ago) that the Battle of Waterloo had not then nearly reached the more distant stars; nor has it now. So the distance of stars is generally expressed in "light years" instead of billions of miles.

#### New Stars.

This is well exemplified by the "Nova" that suddenly blazed out in Aquila in June. Spectroscopic observation of previous new stars appears to indicate that a collision between two bodies is the cause of the outburst, but hitherto the estimated parallaxes have been so small that the collision may have occurred centuries ago and certainly not less than scores of years. The latest Nova, at the time this article goes to Press, is rapidly diminishing in brightness after its short spell of glory. The results of an absolute collision could not disappear so quickly, so the chances are—and mathematical reasoning supports the view—that only a grazing collision actually occurred.

# Parallax and range finding.

The operation of finding the distance of a star is that of range finding on the grand scale. Instead of a base of 50 or 100 yards the diameter of the earth's orbit—186 millions of miles—is used. Two sets of observations are made, at intervals of six months, when we have travelled half way round the sun and are at this great distance from the former spot. Even so the angle which the nearest star has moved through, owing to this immense change of view point, amounts to only about half a second of arc. The measurement of such small angles is a matter of extreme difficulty, especially as

there are a score of corrections to make in every observation—personal and instrumental corrections as well as those due to other matters (such as actual "proper motion" of the star and refraction) affecting the star's apparent position. And yet recently three different observatories have issued their independent estimates of the parallax of a particularly interesting star having a large proper motion—i. e. travelling through space at a great rate—and they agree within about 7 per cent. The discrepancy may seem large—it is about what is expected in a rough terrestrial range finder—but considering all things it is wonderful. It corresponds to measuring a distance of two miles correctly within 250 yards from a base of a about an inch in length. At these distances the brightest star has no visible diameter even in the largest telescope; the minute speck seen is merely a spurious disc of When, as occasionally happens, the dazzling brightness. moon passes between us and a bright star the extinction of its light is instantaneous.

Islam was fought out on the field of Panipat on January 15th, 1761. The Marathas were completely defeated and their power, as far as Delhi was concerned, was shattered for a decade. message in which news of the defeat was conveved to the Peshwa deserves to be recalled. It was simply this: "Two pearls have been dissolved: twenty-seven gold mohurs have been lost and of the silver and copper the total cannot be cast up". Among the fugitives from the battle field the one of the greatest interest in the present connexion is an illegitimate son of the head of the house of Sindhia and the only survivor of his clan. Madhava Rao Sindhia usually known as Madhoji Sindhia rode away from the battlefield according to some a worn out steed which fell at the first ditch. to others, he was on a fine Deccani mare on which he eluded capture for an almost incredible time and space and which carried its rider to the vicinity of Bharatpur. But all accounts agree that the horse eventually fell at a ditch and that an Afghan came up to him, gave him a blow on the leg which lamed him for life and, then after stripping him of his dress and accoutrements rode away, leaving him helpless, half naked, and in agony. He was rescued by a waterman, Rana Khan, afterwards a general in his army, who came along the road from Delhi driving a bullock, on which he placed Madhoji and took him off to a place of safety in Bharatpur.

For several years after Panipat, the Marathas were seen no more in Northern India. It was not until the end of the decade that they raised their heads again. Najib-ud-Daula, an Afghan, was for the time all powerful at Delhi. He had been threatened by the Sikhs in 1767 but rescued from them by the intervention of Ahmad Shah. Shuja-ud-Daula occupied the country as far as Aligarh whilst the Jats became masters of Agra. Najib-ud-Daula thought it advisable to make terms with the Marathas in 1770 but he died shortly afterwards and the Marathas then sent an invitation to Shah Alam to return to Delhi which he accepted in 1771. Into the details of the embroiled and confusing period of war and intrigue which followed, it is

Gaekwar and Holkar. The first Sindhia had been the Peshwa's slipper bearer. The Gaekwar was descended from a cowherd and Holkar from a goatherd. By 1751, the Marathas had possessed themselves of an extensive domain in North Central India. They were masters of Malwa and Orissa and drew their 25 per cent chaut, as it was called, from the revenues of Bengal. Calcutta was threatened and the celebrated Maratha Ditch, traces of which are visible to this day, was constructed for its protection.

In 1754, Alamgir II was placed on the throne of Delhi by Ghazi-ud-din, nephew of the Nizam. The other party at Delhi was headed by Safdar Jung, the Minister whose tomb at Delhi is such a feeble and pretentions copy of Humayun's. In 1757, the Afghau, Ahmad Shah Abdali, who had founded an Empire west of the Indus after the death of Nadir Shah, invaded India. His troops drained Delhi of all that had been left by Nadir Shah in 1738, which could not have been much, and then departed after replacing Ghazi-ud-din by Najib Khan, a Pathan Chief. As soon as Ahmed Shah was out of the way, Ghaziud-din raised his head again and murdered Alamgir II on November 30th, 1759. The Crown Prince, Ali Gauhar, who assumed the title of Emperor under the name of Shah Alam, saved himself by flight to the protection of Shuja-ud-Daula, Nawab of Oudh and hereditary Wazir of the Empire. He was present on the side of the latter at the battle of Buxar between Shuja-ud-Daula and the British, and after Shuja-ud-Daula's defeat, made terms with the British and accepted tribute from the revenues of Bengal. In addition, greater part of the Allahabad province was made over to him. He remained at Allahabad under British protection from 1765 to 1771, when the Marathas recalled him to Delhi. After the murder of Alamgir II, Ghazi-ud-din disappeared and the Marathas took advantage of the opportunity to make themselves supreme at Delhi. It was not for long, however, for Ahmad Shah Abdali came back again and the great contest for the possession of Delhi between the Marathas and the power of

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For several years after Panipat, the Marathas were seen no more in Northern India. It was not until the end of the decade that they raised their heads again. Najib-ud-Daula, an Afghan, was for the time all powerful at Delhi. He had been threatened by the Sikhs in 1767 but rescued from them by the intervention of Ahmad Shah. Shuja-ud-Daula occupied the country as far as Aligarh whilst the Jats became masters of Agra. Najib-ud-Daula thought it advisable to make terms with the Marathas in 1770 but he died shortly afterwards and the Marathas then sent an invitation to Shah Alam to return to Delhi which he accepted in 1771. Into the details of the embroiled and confusing period of war and intrigue which followed, it is

unnecessary here to enter. Suffice it to say that Maratha activity at Delhi somewhat slackened owing to troubles at the Court of Poona and throughout the south of India. Mirza Najaf Khan, a Persian related by marriage to the Nawab of Oudh, came to the front and before his death had managed to recover some portion of the country between Delhi and Agra as well as the fortress of Agra itself.

At this juncture, Sindhia turned his attention seriously to Delhi politics and in 1784 arrived at Agra. After the murder of Afrasyab Khan, the then Prime Minister, Shah Alam came under Maratha domination once more and appointed the Peshwa "Vakil-ul-Mutluk" or Supreme Deputy of the Ine are Empire. Madhoji was appointed the Peshwa's Deputy as Mural well as Commander-in-Chief of the Moghul armies and the provinces of Delhi and Agra were committed to his charge. It was a few years later, in 1788, while he was endeavouring to consolidate his power against the strong Muhammadan faction that still existed and was waiting for reinforcements at Agra that Ghulam Khadir, grandson of the Afghan governor left at Aragic Delhi by Ahmad Shah, who, after Shah Alam's restoration, whilst still a boy, had been made a prisoner and had received treatment which could neither be forgiven nor forgotten, made common cause with another Muhammadan nobleman, Ismail Beg. Ismail Beg's troops were holding Sindhia's at Agra and Ghulam Khadir took advantage of the fact to seize Delhi and the person of the Emperor. The tragedy which ensued is well known. Ghulam Khadir, in his rage at not finding treasure which he felt sure the Emperor had secreted, flung himself upon Shah Alam and blinded him with his dagger, kicking away the royal ladies who had come from behind the curtain to beg, for mercy. "Do you see anything?" he asked derisively. "Nothing" said the Emperor, with a touch of royal dignity "but the holy Koran between me and you" for Ghulam Khadir had sworn on the sacred book to protect him. This atrocity was too much for Ismail Beg who promptly went over to Sindhia. Ghulam Khadir escaped from Delhi to perish miserably a few days latter and Ismail Khan and Rana Khan, the ex-water carrier occu-

pied the Imperial city. Shah Alam was enthroned with due pomp and Sindhia became "Madar-ul-Mahan," "Ali Jah Bahadur"-Exalted and Illustrious Centre of Affairs. His position grew stronger and stronger until his death in 1794, when he was succeeded by a grand nephew. Daulat Rao Sindhia, a youth of altogether inferior character and ability. Of Sindhia's struggles with the Rajputs, something will be said when we come to deal with the career of DeBoigne, the adventurer to whom he owed so much. With the aid of Perron, DeBoigne's successor, Daulat Rao Sindhia managed to remain the leading figure in Hindustan for another eight or nine years, in spite of the rivalry of Jeswant Rao Holkar, now head of the house of Indore. Of the events which led to the fall of the Maratha Confederacy as the result of the great battles of Laswari and Assaye, it is unnecessary to say more than that, in the main, they occurred at Poona. The great anarchy may be said to have been practically ended by these two British victories, though there was an aftermath in the Pindari war. Where were the British all this time? It was Warren Hastings' policy to leave events in Hindustau to work out themselves without any interference on his part. There is some reason to believe that Warren Hastings and Madhoji Sindhia, the two greatest men of their generation in India, had some sort of an understanding with each other. Colonel Malleson thinks that Sindhia's ultimate aim was the overthrow of the British and sees in the presence of European adventurers at his court evidence of the fact. But that is all the evidence there is, and their presence was far more probably due to Sindhia's desire to consolidate his power in Hindustan. What was policy on the part of Warren Hastings became weakness on the part of his successors. The result is that the British hardly enter at all into the narrative until the end.

The object of this lengthy preamble has been to show how many contending parties there were in Hindustan at the end of the eighteenth century and the unique chance this gave to the soldier of fortune. First of all, there was the tottering Moghul throne and the Muhammadau factions around it; then the Mara-

tha Confederacy and the rivalry between Sindhia, Holkar and their common master, the Peshwa; then the Rajputs, whose constant endeavour it was to throw off Muhammadan and Maratha rule alike; and, lastly, such smaller but still considerable powers as the Rohillas, the Afghan tribe of Rohilkhand, the Jats, whose stronghold was Bharatpur and the Sikhs, who were just beginning to emerge into prominence. The careers of the adventurers will be all the more intelligible if this is borne in mind.

We will begin—at last—with the greatest scoundrel of the lot, Walter Reinhardt, who, as is the case with so many men, is interesting rather on account of his wife than for any merits he himself possessed. The said wife, known to history as the Begum Somru, was not, as a matter of fact, his wife at all, though he was married to her by Muhammadan rites, as he had an insane wife alive at the time who lived to be a centenarian. Reinhardt was the son of a butcher—a fitting trade for the father of such a son and was born at Salzburg in 1720. Like so many of the adventurers/mentioned in this article, he commenced life as a seaman and deserted his ship on its arrival in Southern India. When he came to India, he assumed the name of Somers, but his morose look and sullen bearing soon caused its corruption into Sombre which, in turn, was twisted by the natives into Somru. several changes of allegiance from the French to the British and back again and a period of service as a trooper under Suraj-ud-Daula, the ruler responsible for the Black Hole tragedy, Sombre took service under an Armenian, Gregory, who was endeavouring to form a regular army for Kassim Ali Khan, Suraj-ud-Daula's successor as Nawab of Bengal. In 1763, by which time Sombre had been promoted to the command of two battalions, the East India Company quarrelled with Kassim Ali, their own nominee. Mr. Ellis, the local agent of the Company, attempted to seize Patua but was worsted and shut up up there with 150 white and 'coloured'-presumably Eurasian -followers. Kassim Ali ordered a general massacre which his native minions refused to carry out. Reinhardt, however, undertook the task with alacrity. The account of what hap-.

pened, as recorded in a contemporary narrative, runs as follows: "Somers invited above forty officers and other gentlemen who were among these unfortunate prisoners to sup with him on the day he had fixed for the execution and when his guests were in full security, protected as they imagined by the laws of hospitality as well as by the right of prisoners, he ordered the Indians under his command to fall upon them and cut their throats. Even these barbarous soldiers revolted at the orders of this savage European. They refused at first and desired that arms should be given to the English and then they would engage Somers, fixed in his villainy, compelled them with blows and threats to the accomplishment of the odious service. unfortunate victims, though thus suddenly attacked and wholly unarmed, made a long and brave resistance and with their plates and bottles (Somers had taken the precaution not to give them any knives and forks) even killed some of their assailants, but, in the end, they were all slaughtered. Proceeding then with a file of sepoys to the prison where a number of prisoners then remained, he directed the massacre and with his own hands assisted in the inhuman slaughter of one hundred and forty eight defenceless Europeans confined within its walls, an appalling act of atrocity that has stamped his name with infamy for ever".

Possibly owing to a premonition of an even viler massacre nearly a century later, the Nawab Wazir of Oudh seems to have thought Oudh a suitable place for a man of Sombre's calibre and offered him an appointment at Lucknow. One of the principal conditions insisted on by the English after the battle of Buxar was the surrender of Sombre. The Nawab accepted the stipulation in theory but pointed out that he was unable to comply with it in practice as Sombre was in command of an armed force. He therefore proposed, as an alternative, to have him poisoned or assassinated, a suggestion which, it need hardly be said, was declined. Meanwhile Sombre was getting uneasy and, in the end, marched off westwards with all the plunder he could collect. After a short spell of service under the Afghan Chief of Rohilkhand and another with the Jats at

Bharatpur, he arrived at Delhi where he was employed by Mirza Najaf Khan. Sombre remained in the service of the Imperial Court until his death and was assigned a jagir or estate at Sardhana, some forty miles north of the capital, where he built a fort in which he settled down. There he fell in love and married—bigamously as already stated—a woman regarding whose beauty and ability all historians are agreed but about whose parentage there is considerable doubt. She was certainly of Moslem birth and the most likely story makes her a Kashmiri dancing girl. Sombre's force was officered by Europeans but they were usually the refuse of society. His troops were nearly always in a state of mutiny. They seldom obtained their pay uutil they had placed their commander in confinement and made him dig up his hidden treasure if he had any, or borrow from sowcars if he had none. It is pleasant to read that when Sombre's troops got more than usually impatient, it was their custom to place him, with a minimum of clothing on, across a hot gun. When one battalion had extracted its dues, he was often handed over to another to be still further squeezed. ended his stormy life in 1778.

After his death, the command of his troops, their pay and the jagir of Sardhana were continued to the Begum Somru, who was always known by that name though in 1781 she was baptised under the name of Joanna Nobilis. Though an adventuress, she was certainly not a European and my excuse for giving some account of her further career must be partly its intrinsic interest and partly the fact that she had so many European adventurers in her service. At one time there were over 200 of them. She first of all gave the command to a German named Pauly who was murdered by a 'bloody process' in 1783. Baours, Evens and Dudrenec, who succeeded him in rapid succession, all left owing to the 'beastly habits' of their European subordinates. The next to command was one of the most celebrated of adventurers, George Thomas, that free lance from Tipperary, about whom more will be said later. Whilst Thomas was in her service, the Begum and her troops accompanied Shah Alam on a futile expedition, the only success obtained in which was the capture of Gokalgarh, in what is now the district of Gurgaon. This was entirely due to the enterprise of the Begum and Thomas which saved the Emperor's person and turned what looked like a certain defeat into victory. In the Durbar held on the afternoon of the battle, the Begum was publicly thanked by the Emperor and honoured with the title of "Zeb-un-Nissa", "Glory of the Sex" which she ever after continued to bear. Thomas continued in her service till 1793 when he left it in disgust at the intrigues of the French officers in the Begum's employ, one of whom, Le Vassoult, succeeded him in the command of the troops and Sombre as husband of the Begum.

Le Vassoult was one of the very few gentlemen who ever took service with the Begum and, in consequence, thoroughly despised his ruffianly companions whom he kept at a distance. censed at his treatment of them, they engineered a mutiny, the object of which was to depose the Begum and to instal in her place Aloysius Balthazar Reinhardt, a son of Sombre by his real wife. When the troops broke out into open mutiny, the Begum and Le Vassoult attempted to save themselves by flight to the English but their departure was discovered and they were over taken and surrounded. They had agreed that, in the event of their falling into the hands of the mutineers, neither should survive the other. The Begum failed to carry out her part of the bargain for she merely slashed herself slightly in the breast with a dagger. Her attendants shouted that she had killed her self and Le Vassoult, hearing this and seeing a blood stained handkerchief torn from her neck by one of them, put a pistol to his head, shot himself through the brain and fell lifeless from the saddle. The Beguin was carried back to Sardhana and kept chained to a gun-not a hot one on this occasion,for seven days, during which she was only kept alive by the ministrations of a faithful ayah. She had, however, managed to communicate with George Thomas, who, forgetting old animosities rushed to the aid of the fair lady in distress, deposed Balthazar Sombre, who was sent as a prisoner to Delhi, and restored the Begum to the masnad. There she remained firmly

seated for the rest of her life. The command of her battalions was bestowed on Colonel Saleur. The contingent took part in the struggles of the next eight years, always, of course, on the side of Sindhia, and once to its shame, be it said, against George Thomas. It never distinguished itself. When at last it met the English on the field of Assaye, four of the five battalions were left to guard the Maratha Camp and so escaped. The Begum was one of the first to surrender to Lake after the débacle. Robert Skinner, brother of the more famous James, who had entered her service just before the declaration of war. was deputed to arrange terms and this he did most satisfacto-Lord Lake was very pleased at the early demonstration of the Begum's loyalty and when she came to pay her respects, after dinner it should be noted, took her in his arms and kissed her to the scandal of her attendants. The Begum with great presence of mind put matters right by remarking "It is the salute of a padre to his daughter!"

After Assaye, the Begum's troops were, of course, disbanded. The revenues formerly devoted to their upkeep made her a very wealthy woman. She survived Assaye for very many years, living in semi royal state at Sardhana. Biship Heber who saw her in 1825 described her as a very queer looking old woman with brilliant but wicked eyes and the remains of beauty in her features. That she was a lady with a temper is shown by the following anecdote which is given in all accounts of her. A slave girl had offended her in some matter connected with a love affair. The girl was brought before the Begum and a hole was dug in the floor of the room in which she was buried alive, the Begum subsequently smoking her hookah unconcernedly over the living grave.

The sums she devoted to charitable and religious institutions at this period were very large and somewhat indiscriminate. She sent the Pope a lakh and a half of rupees, the Archbishop of Canterbury half a lakh and the Bishop of Calcutta a lakh. To Catholic Missions in India, she subscribed Rs. 1,30,000 and for distribution to the deserving debtors of Calcutta Rs. 50,000. She built a handsome Roman Catholic Church at Meerut as well as a

Protestant one. She died in 1836 leaving a fortune of £700,000, divided between charities and her step grandson, who took the name of Dyce-Sombre, and his two sisters. She is buried in the Roman Catholic Church at Sardhana, where there is a very ornate monument to her memory.

We pass now to a very different man from Reinhardt. Benoit La Borgne, known to history as Benoit De Boigne, is the greatest of the adventurers both in character and achievements. He was born at Chambéry in Savoy on March 8th 1751. His father, a hide merchant, gave him a good education and intended him for the law, a profession which had no attraction for a lad of De Boigne's adventurous disposition. At the age of seventeen he left home, tradition says in consequence of a duel, and took service as an ensign in a regiment in the Irish Brigade of the French Army. There he remained for five years, during which he obtained some knowledge of English and a thorough training Dissatisfied with his prospects, he threw up in the art of war. his commission in 1773 and eventually found his way to the camp of the Russian Admiral, Orloff, who was then leading the forces of Catherine II in a war against the Turks. Orloff appointed him to a Captainey in a Greek regiment in the service of the Empress. DeBoigne's new regiment, however, fared very badly in an attack on Tenedos and he was taken prisoner and sent to Constantinople where he remained until the war come to an end, seven months later. He was then released and made his way to St. Petersburg to represent his claims to Catherine who gave him a Major's commission and appears to have entrusted him with some sort of mission on her behalf in the east. ly afterwards, on his way through Southern Russia, De Boigne fell in with Earl Percy who gave him letters of introduction to Warren Hastings, amongst others. Armed with these, De Boigne after a most adventurous voyage reached Madras in 1778 and was given a Commission in the 6th Regiment of Native Infantry. Owing to his being on escort duty, he escaped the fate of the rest of his regiment when, under Colonel Baillie, it was cut to pieces at Perambakam by Haidar Ali in September, 1780.

DeBoigne was not, however, very happy in British service and it was not long before he threw up his commission. few months as a fencing master, he seems to have remembered his mysterious mission from the Empress of Russia and determined to make his way back to Europe through Kashmir, Afghanistan and Persia. With this object in view, he made his way to Calcutta, where Warren Hastings gave him a courteous reception, interested himself in his proposed journey and provided him with letters to all the British Agents en route and to the Nawab Wazir of Oudh. After a short stay at Lucknow, DeBoigne proceeded to Delhi but, disappointed at being unable to present himself to the Emperor owing to the suspicions of Mirza Shafi, Shah Alam's Minister at that period, he accepted an invitation from Mr. Anderson, the British Resident at the Court of Madhoji Sindhia who was then besieging Gwalior, now Sindhia's capital, but at that time in possession of the Rana of Gohad, a Jat Chieftain. Smarting with resentment at the loss of his baggage, which had been stolen under Sindhia's orders in order that he might discover the recent movements or ultimate designs of its owner, DeBoigne offered his services to the Rana of Gohad and asked for an advance of a lakh of rupees to enable him to recruit 8.000 men at Delhi, Agra, Jaipur and Gohad, to concentrate them secretly at a point on the frontier of the Rana's territory and with them to attack the besieging force and drive it from his dominions. The Rana declined this offer from an unknown adventurer but allowed the details of it to leak out in the hope that Sindhia would be frightened and would raise the siege.

The neighbourhood of Gwalior now became too hot for DeBoigne who there upon offered his services to the Raja of Jaipur and was engaged at a salary of Rs. 2000 a month to taise and discipline a couple of battalions of tegular infantry. DeBoigne thought he ought to let Hastings know of this. Hastings, owing to the mistrust his Members of Council entertained of an 'interloper', recalled him to Calcutta. DeBoigne was, of course, not bound to obey, but he thought it wise to do so. By the time he finally managed to get away to Jaipur in 1784, the policy of the State had changed.

The Raja had now no use for him and discharged him with a solatium of Rs 10,000. DeBoigne made his way disconsolately back to Mr. Anderson, and Sindhia, who had been much impressed by his plan of campaign in aid of the Rana of Gohad, now took him into his service. He was engaged to organise a force of two battalions of infantry on a salary of Rs. 1000 a month for himself and pay for 1700 men and officers at an average rate of Rs. 8 a His first duty in Sindhia's service was to accompany a body of troops under Appa Khandi Rao detached for the pacification of Bundelkhand. After that he was engaged in sterner work. The Muhammadau party at Delhi under Ghulam Khadir and Ismail Beg, resenting Sindhia's domination, had made common cause with the Rajas of Jodhpur and Jaipur. Against these formidable antagonists, Sindhia proceeded early in 1787. A great battle took place at Lalsot, about 40 miles from Jaipur. DeBoigne's battalions, considering their numbers,, behaved exceedingly well but the Imperial army, now under Sindhia's command, went over to the enemy and the day ended in the retreat of what was left of Sindhia's force covered by DeBoigne.

Sindhia was for the time in a bad way. He had lost Delhi and the surrounding provinces. Aligarh had been captured and Agra was closely invested. He could do nothing but throw himself into Gwalior and wait for reinforcements from the Deccan. However, an alliance with the Jats enabled him to raise the siege of Agra and to meet Ismail Beg and Ghulam Khadir at Chaksana near Bhatatpur. Here much the same thing happened as at Lalsot. DeBoigne on the right and a French adventurer, Lestineau, on the left were completely successful and Sindhia would have won a complete victory if they had received any support from the centre and the cavalry. As it was, the action was undecided but, as it ended in Sindhia's retreat from the field, it should perhaps be regarded as a defeat. However, at Agra, some two months later, DeBoigne's battalions, now becoming war seasoned veterans, contributed greatly to the victory over Ismail Beg, a victory which extinguished for ever the last flickering hope of independence that remained to the Moghuls and established the ascendency of the Marathas. It was whilst Sindhia was waiting for reinforcements after the battle of Agra that the palace tragedy already referred to happened. The saddle bags in which Ghulam Khadir had carried off the Crown jewels were never found and it was supposed that Lestineau's hurried retirement from Sindhia's service to Europe was not unconnected with this fact. Ismail Beg came over to the Marathas who took possession of Delhi without firing a shot.

It must be remembered that, up to this point, DeBoigne had only been in command of two battalions of 1000 men each. His successes at Lalsot, Chaksana and Agra fired his ambition and he now proposed to Sindhia that the two battalions should be augmented to 10,000 men at arms. Sindhia was, however, opposed to any increase, mainly because he had not yet freed himself from the Maratha prejudice in favour of cavalry, and DeBoigne resigned his post and went off to Lucknow to engage in mercantile speculations with his old friend, Claude Martine.

Martine, born in 1732, was the son of a silk manufacturer at Lyons. He ran away from home at an early age and enlisted in the French army. He came to India in 1757 with Lally and was one of the Count's body guard which deserted en masse to the English when Pondicherry was besieged by Coote. Entering the Company's service as an ensign, he was sent as a surveyor to the north eastern districts of Bengal and was so successful there that he was rewarded by a similar appointment in Oudh. His skill in gunnery brought him to the notice of the Nawab, who obtained his transfer to his own service. In all the political changes of the next twenty years, Martine remained the power behind the throne and succeeded in keeping on excellent terms both with the Nawab and the Company. His position as a medium for petitioners and as a depository for valuables in times of stress enabled him to make a large fortune. In 1790, when war broke out between the English and Tipu, he presented the Company with a number of valuable horses for which service he was gazetted to the rank of Colonel and, subsequently, to his great satisfaction, to that of Major General. He built himself a remarkable house at Lucknow in which he is buried and, on his death in 1800 at the age of 68, left a fortune of half a million sterling, bequeathed in innumerable legacies, amongst which was the one which enabled the LaMartinière College at Lucknow to be founded.

To return to DeBoigne. Sindhia found himself in need of just the force that DeBoigne proposed to raise and the adventurer was soon recalled and given a free hand. A brigade of about 10,000 men was speedily organized. DeBoigne was promoted to the rank of General, his pay, fixed at Rs. 4,000 a month, was subsequently raised to Rs. 10,000 and he was given a large and rich tract of country round Aligarh, which was his head quarters, as a jaidad or military assignment for the support of his troops. The revenues of this tract, when he first took over its administration amounted to 16 lakhs but subsequent additions of territory and his judicious administration raised it to 30 lakhs.

DeBoigne's first work after the organisation of his brigade was tocrush Ismail Beg, who had renounced his temporary allegiance to Sindhia and allied himself with the Rajputs. This he did very completely at Pathan, about half way between Gwalior and Ujjain, and again at Marta, 80 miles from Aimere, shortly afterwards. Sindhia was so impressed by these successes that DeBoigne was allowed to organise a second and a third brigade officered by Europeans. It may be of interest to mention that a Colonel in DeBoigne's army got Rs. 3,000 a month, a Lieutenant Colonel Rs. 2,000, a Major Rs. 1,200 and a Captain Rs. 400, with half as much again when serving in the Deccan. DeBoigne was now at the height of his power and virtual ruler of Hindustan, for Sindhia, secure in his good faith and ability, departed in 1793 to look after his interests at the Court of the Peshwa at Poona. His departure was the signal for Tukaji Holkar, Minister of the widow of the head of the House of Holkar, who had been growing increasingly jealous of Sindhia's ascendancy, to take the field, but he was crushed at Lakhairi in September, 1793, and Sindhia was undisputed master of the situation until his death at Poona in February, 1794. DeBoigne, though he received many tempting offers from the old Shah at Delhi and the new one at Kabul,

remained faithful to Sindhia's successor, Daulat Rao, but, in 1795, his health began to fail and he resigned his post. not, however, until January, 1797, that he was able to wind up his affairs and to leave India, carrying with him a fortune of £ 400,000 amassed during a stay of 19 years. He lived for some 32 years longer, mostly at his native place at Chambéry where he died in 1830, full of years and honours. The King of Sardinia created him a Count and a Lieutenant General and Louis XVIII a Marshal and a Knight of the Legion of Honour. the Begum Somru, his benefactions in his old age were on a very extensive scale, in spite of the avarice which has been charged to him as his besetting sin and Chambéry at this day can show several institutions which he founded. De Boigne married the daughter of a Marquis after his return to France but the marriage was not a very successful one. As Keene says, "it must be evident that with the one exception of his not very successful matrimonial experiment. General De Boigne is a singular example of human possibility".

De Boigne's career, successful as it was, appears almost prosaic compared with that of George Thomas. It is a "long, long way from Tipperary" where Thomas was born in 1756 of parents of humble position, who gave him no education, to Madras, but, at Madras, Thomas arrived in 1781 or 1782 and promptly deserted from the ship on which he had been either a quarternaster, sailor or cabin-boy, probably the second of the three as he was certainly too old to be a cabin boy. After spending a few years among the Poligars of the Deccan, he enlisted in the army of the Nizam. But that did not suit him for long and, in 1787, he set out to walk from Hyderabad to Delhi, a very adventurous journey in those days and one which it is improbable. that anyone but a wild Irishman would have accomplished in safety. On arrival at Delhi, Thomas offered his services to the Begum Somru and his career in that lady's service has been & already related. After he left it, in 1792, his savings soon gave out and he had to look about for some means of livelihood. Keene puts it, "he accordingly took measures to acquaint the neighbouring nobility and gentry that he was prepared to execute

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orders for rapine and slaughter and it was not long before he received an engagement from Appa Khandi Rao, one of Sindhia's generals who had recently been dismissed, had set up on his own account and wanted someone to collect his revenues for him''. Appa Khandi Rao had no money at his command and so, instead of paying Thomas, assigned to him the revenues of three districts from the inhabitants of which he had never been able to collect a single pie himself. Thomas managed to recruit a miscellaneous rabble of about 700 men and, in 1794, after extorting from the inhabitants of his jaidad an agreement to pay a year's revenue and obtaining possession of Tijara and Jhajjar, the two strongest places in it, may be said to have entered more or less into his estate.

Appa Khandi Rao proved amost unsatisfactory master. At one minute, we find Thomas rescuing him from his mutinous troops, a service for which he was adopted as a son and endowed with three more districts adjacent to those he had already been given, the next, Appa Khandi Rao possessed with a fear that Thomas was getting too powerful, intrigued against him with Lakwa Dada, one of Sindhia's generals, and got him into serious difficulties.

Thomas could have entered the Imperial service at almost any time during his career and received several offers from Sindhia's agents at Delhi but in spite of Appa Khandi Rao's treachery, he preferred to remain true to his salt as long as he lived and to be entirely independent after his death. In 1797, Appa Khandi Rao committed suicide by throwing himself into the Junna and Thomas was his own master once more. He was at the time engaged in repelling Sikh raids on Appa Khaudi Rao's territories and does not appear to have raised the question of his adoption by the late Chief who was succeeded by his nephew, Vanam Rao. Vanam Rao soon quarrelled with Thomas and with the aid of Bapu Sindhia, Governor of Saharanpur, deprived him of three of his districts, Panipat, Sonepat and Karnal, leaving him with only the small district of Jhajjar on which to draw. These reverses turned Thomas into a free-booter pure and simple. A typical example of his methods at this period was his attack upon Harichu, a town belonging to Jaipur, for which there was not a shadow of justification except his own necessity. Thomas called upon the Governor of the town to pay him a lakh of rupees as ransom and when it was refused, stormed and took possession of the place. The fort, however, still held out and the Commandant offered Thomas Rs. 52,000 to go away. Thomas accepted the bribe but in the meantime, as his memoirs record, "the town had unfortunately been set on fire and burnt so fiercely that goods to the amount of several lakhs were totally consumed".

After further depredations in Jaipur Thomas returned to Jhajjar and began to consider his further course action. To the north of what territory was left him lay a tract of over 3000 square miles known as "Green land", which was without an owner. Thomas determined to take possession of this 'no man's land' and after storming the town and fort of Kanhori, the inhabitants of which were notorious for "thievish depredations", which much grieved him, established himself at Hansi in 1797. This he made his capital, rebuilding the decayed city walls and strengthening the defences of the fort. In his own words "as it has been long deserted, at first I found difficulty in providing inhabitants but, by degrees, I selected between five and six thousand, to whom I allowed every lawful indulgence. I established a Mint and coined my own rupees which I made current in my army and country, as from the commencement of my career at Jhajjar I had determined to establish an independency. I employed workmen and artificers of all kinds, cast my own artillery, commenced making muskets, match locks and powder and in short made the best preparations for carrying on a defensive and offensive war". "I wished," he said afterwards "to put myself in a capacity of attempting the conquest of the Punjab and aspired to the honour of planting the British standard on the banks of the Attock". It is difficult to say to what heights Thomas might have attained had he not been addicted to drink. In 1799, he assisted

Vanam Rao in harrying Jaipur, made a raid against Bikanir, from which he extorted a handsome indemnity, and then turned his attention to his old enemies, the Sikhs. He then returned to Hansi but before the end of the cold weather was off again to renew his campaign against the Sikhs of Jhind and Patiala. From them he says, "I realised nearly two lakhs and was to receive an additional lakh for the hostages." He was then at his zenith, "Dictator," as he put it, "in all the countries south of the Sutlej".

But his growing power had attracted the attention and aroused the distrust of Perron, who had succeeded De Boigne in the command of Sindhia's regular troops. Whilst Thomas was away early in 180! on what was to be his last campaign against the Sikhs. he heard that Perron had raided Hariana. He at once returned by one of those rapid marches for which he was so famous, rushing his men along at the rate of from 30 to 40 miles a day to find that the birds of prey had flown. Perron soon, however, returned with reinforcements and first tried negotiations. Thomas was required to surrender his territories, to enter Sindhia's service on a fixed monthly salary and to send immediately four battalions to assist Sindhia His previous history was not such against Holkar. to make terms of this nature acceptable to him and negotiations were broken off, Thomas retiring in disgust to Hansi and Perron leaving the campaign against him to be conducted by an adventurer of his own nature, Bourguien. Sikhs were invited to invade the north of Hariana, the Begum was called upon for a contingent which she and reinforcements were ordered up from Agra. Bourguien on marching to Georgegarh, one of Thomas' chief strongholds and presumably named after himself, found Thomas had goue off to flight the Sikhs. This, however, was only a ruse to draw off the attention of the invaders from Hansi and proved completely successful. Leaving three battalions to besiege Georgegarh, Bourguien went off after Thomas who doubled back, marching 70 miles in

days, and put Smith, who had been left in command at Georgegarh, to flight. When Bourguien arrived three days days later, he found Thomas encamped in a strong position. The engagement which ensued was indecisive though the assailants lost about half their force of 8,000 in killed and wounded whilst Thomas only lost 700 men. Among them, however, was Hopkins, second in command and an invaluable officer. Had Thomas acted with his usual energy after the conflict, he might have made an end of Bourguien's force, but he remained inactive for a month, apparently giving way to a bad bout of drink.

In the meantime, treachery undermined his army and, at last, finding himself without food or resources he determined to cut his way through to Hansi. This he did on November 1st accompanied by his only two remaining European officers, Hearsey and Birch. He reached Hausi, 120 miles away, the next day, having covered the distance on the same horse in 24 hours. Bourguien followed and surrounded Hansi which surrendered on January 1st, 1802, after a heroic struggle, in the course of which Thomas came out to meet his enemies clad in a complete suit of chain armour like a crusader of old. Bourguien, who was a poor creature, had wished to make a terrible example of Thomas but his European officers declined to be a party to such a proceeding and secured honourable terms for him. He was allowed to retain his arms, his family and his property, the value of which was about three lakhs of rupees. A day or two later, Thomas got drunk and quarrelsome at a dinner to which Bourguien invited him. Bourguien foolishly proposed the toast of "Success to General Perron" which was too much for Thomas who rushed at him with a shout of "One Irish sword is still sufficient for a hundred Frenchmen" and drove him from the tent. Thomas was left in possession calling upon the Company from the middle of the dinner table to witness that he had made the d-d Frenchman run like a jackal! He was finally pacified but on his way back to his quarters, cut down a sentry who challenged him and refused to accept the password "Sahib Bahadur" by which Thomas was known to his troops. The natives always called him "Jowring Sahib".

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After this performance, it was decided that the sooner he was got rid of the better and he was accordingly packed off to Sardhana where he had left his wife, a French dependent of the Begum, and his four children and then sent on to the British cantonment at Anupshahr where he was put on board a boat for Calcutta accompanied by Captain Franklin, the author of his memoirs. He died on the way down to Calcutta and was buried at Berhampur.

Of Perion, who succeeded De Boigne as commander of Sindhia's disciplined forces, it is unnecessary to say much. He was a poor edition of De Boigne, as his master Daulat Rao was of the great Madhoji. His real name was Pierre Cuillier and, like Thomas, he came out to India as a common sailor and deserted his ship. With Perron, his own interests always stood first and though, for this reason, he attained perhaps even greater heights than De Boigne, his success did not rest on nearly such a solid foundation. He declined to give Daulat Rao Sindhia help when he wanted it in the Deccan and it was this which induced the latter to supplant him by Ambaji Inglia at the outbreak of the great contest between the Marathas and English, when Perron had, as a matter of fact, purely for selfish reasons, decided to throw in his lot wholeheartedly with the Marathas. Perron then surrendered to General Lake at Sasni. He was allowed to settle his affairs and finally left India in 1806 with a considerable fortune, though it was not so large as he had hoped it would be, for some 22 lakhs which he claimed as his own had been captured at Agra and treated as lawful spoils of war. However, Perron did not do so badly as he had £ 280,000 invested in the East India Company's funds. On his return to France, he bought an estate at Frasnes in the Vendôme country and there he lived till his death in 1834 in his 80th year.

No article on European adventurers in India would be complete without some mention of James Skinner. Skinner was born in 1778. His father was a subaltern in the British Army in Bengal and his mother a Rajput lady, the daughter of a landholder in the Mirzapur district, who died by her own hand in

1790, because it had been decided to send her daughters to school and she regarded this as a violation of Rajput purdah traditions. His father attempted to apprentice James to a Calcutta printer but three days of this life was enough for him. At last he was allowed his own wilful way, which finally led him to DeBoigne, who gave him an ensign's commission on Rs. 150 a month. Skinner was then 17. His service in Sindhia's army was marked by conspicuous gallantry though, on account of Perron's jealousy of Europeans other than Frenchmen, his promotion was not par-It was on one occasion, in an attack on a ticularly rapid. Rajput Chief at Vinara near the Chambal river, that Skinner, severely wounded and left all night on the field of battle, vowed that, if he lived to recover, he would build a Church to the God of his white father, a vow to the fulfilment of which St. James' Church at Delhi bears witness. This, is, however, I should say, not the account given by Skinner himself in his memoirs by Fraser. There he says "so dreadful did this night appear to me, that I swore, if I survived, to have nothing more to do with soldiering—the wounded on all sides crying out for water, the jackals tearing the dead and coming nearer and nearer to see if we were ready for them: we only kept them off by throwing stones and making noises. Thus passed this long and horrible night".

war broke out with the English in 1803, Perron summarily dismissed all his English officers. Skinner, who had at that time no particular love for the English, was anxious to strike a blow for Sindhia and attempted to get the order reversed as far as he was concerned. He found Perron,-it was the day before he surrendered to the English—attempting to rally his Maratha horsemen, ran to him, seized the bridle of his charger and made an offer of service to the distracted General. "Ah, no" said Perron, "all is over, These fellows have behaved badly; do not ruin yourself, go over to the English: it is all up with us". Skinner insisted but was told plainly that confidence was at an end. At last Perron shook him off and rode away with the repeated cry "Goodbye, Monsieur Skinner-No trust, no trust". Skinner

accordingly went over to the English with his brother and received such treatment from Lord Lake as seemed to them "perfectly marvellous". Lake took a great fancy to him, as did most people with whom he came in contact; and when a body of Perron's horse, about 2000 in number, came over to the English after the battle of Delhi, appointed "Sekunder Sahib" as he was called by the natives, to the command. Skinner's irregular horse, the "Yellow Boys" as they were known from their canary coloured uniforms, did excelient work, first against Holkar in 1804, then against the Pindaris in 1815, against Arab mercenaries who broke out at Poona in 1819 and finally—as far as Skinner himself was concerned—at Bharatpur in 1822, in the capture of which stronghold they very largely assisted. Skinner was given a valuable jagir in the Aligarh district and his headquarters during the last years of his life were at Hansi, George Thomas' old capital. In 1822, he was given a Lieutenant Colonel's Commission in the British Army and, in 1826, he was made a Commander of the Bath. He died in 1841 and is buried in his church at Delhi. He was given a magnificent funeral, so much so that the natives said that no Emperor had ever entered Delhi in such state as "Sekunder Sahib". It only remains to add that until the later years of his life—he was confirmed in 1836—his domestic habits were in many respects more Muhammadan than Christian. His matrimonial arrangements were on a lavish, not to say ostentatious scale, as is shown by the fact that he left behind him a very numerous family by sundry wives, of whom he had at least fourteen.

One of the adventurers in Holkar's service who deserves mention is Colonel William Linnaeus Gardner who, in 1804, returned to British employ and raised a corps of irregular horse known as "Gardner's Horse". Gardner who was the nephew of the first Lord Gardner, a British Admiral, was married by Muhammadan rites to a princess of the House of Cambay. His elder son, James, married a niece of the Emperor Akbar Shah, Shah Alam's son and successor. The younger son, Alan, also

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married a Muhammadan lady, Bibi Sahiba Hunya, and left two daughters, Susan and Harmuzi. The latter married, in 1836, a cousin, William Gardner, a nephew of the second Lord Gardner. Their son, Alan Hyde Gardner, settled on the family estates near Nadir in the Etah district of the United Provinces. He also married a lady of Muhammadan descent, Jane, a converted princess of the House of Delhi. He was, therefore, a great grandson of a Prince of Cambay and a great nephew of an Emperor of Delhi and a King of Oudh.

It should be said that some of the European adventurers were not so fortunate as most of those so far mentioned. The career had its ups and downs and many of them only experienced the downs. But there were few as unfortunate as Vickers, Dodd and Ryan, young officers in the service of Holkar, who, when they refused to fight against the British in 1804, were beheaded under Holkar's orders.

The careers of the adventurers dealt with in this article were passed mostly in the north of India. There were numerous others in the service of Native States in the south, of whom Raymond, whom Colonel Malleson considers, with insufficient reason, to have been an even greater man than De Boigne, is the best known. Raymond stood in much the same relation to the Nizam as De Boigne or Perron did to Sindhia. He was succeeded on his death in 1798 by another Prenchman, Piron, who however, did not occupy the post long for Lord Wellesley insisted on the disbanding of the Nizam's French army at the end of that year.

In conclusion, it only remains to add for the benefit of lady readers of this Journal that the Begum Somru was not the only adventuress of the fair sex and that it was not at all uncommon for a widow to succeed to the command and emoluments of her husband. The most interesting case of this kind, after that of the Begum, is that of the widow of a Portuguese officer named Mequinez who had rendered signal service to Haidar Ali and was slain in battle against the Marathas. Haidar Ali immediately conferred the command of his battalion on his widow,

Madame Mequinez, and invested her with the rank of Colonel' which she was to enjoy until her son became old enough for the post. The lady accompanied her regiment everywhere; its colours were carried into her house and she had a private sentry at her door. She received the pay of the force and caused it to be distributed and the deductions from it made in her presence. When the regiment was drilled and paraded, she inspected it herself but, in time of war, her second in command led it into action. Her fate was rather a humiliating one. She married a "Mongrel Portuguese Sergeant" whereupon Haidar Ali reduced her to a Sergeant's rank and pay because by her own voluntary action she had degraded herself!

# TAOTIOAL EXEROISES FOR SUBORDINATE OAVALRY LEADERS.

BY

MAJOR R. W. W. GRIMSHAW 34TH POONA HORSE.

[BY SUBORDINATE LEADER IS MEANT JUNIOR BRITISH OFFICERS,
ALL INDIAN OFFICERS, ALL NON-COMMISSIONED OFFICERS,
BRITISH OR INDIAN.]

I have often heard officers maintain that they had no use for tactical problems, that all they wanted of their subordinates was implicit obedience of orders and a well marked desire for an armed conflict; indeed many did not disguise that, in their opinion, tactical instruction with anything but the full complement of troops had a disintegrating effect on the two virtues just alluded to.

Implicit obedience of orders and a desire for an armed conflict unquestionably occupy pride of place amongst those many virtues prescribed for the soldier, be he Field Marshal or private. Failure in these two respects connotes failure everywhere. Nevertheless the writer is unable to grasp why the study of simple tactical-topographical problems should in any way tend to stifle these two essential virtues. Indeed it would appear that the careful study and comparison of many varying tactical situations during peace time has a tendency to strengthen obedience of orders, and to stimulate the desire for an armed conflict. Such is particularly true in these days of rapid spread of education.

The old adage about not reasoning why, was, no doubt, a very suitable and thrilling battle cry in the days before universal education had taught men how to reason.

Soldiers in 1918 are apt to reason why, and the slight insight into tactical situations, as presented by elementary tactical problems, far from undermining obedience and desire for an armed conflict, ought to bring home the vital necessity for preserving those virtues intact.

Another type of argument, hard to endure patiently, is that put forward by the man who, when set a simple tactical problem

involving a situation frequently met with under active service conditions, affirms that if it was the real thing, presumably war, he would know exactly what to do.

The writer would enquire why, if bullets appear, a man is to develope right thinking and acting powers, when amidst the security of peace conditions he is unable to do so. I know there are some who will say "Oh, instinct will pull one through": will it?

I venture to maintain that he whose instinct-leads him to make an ass of himself in peace will make a much greater ass of himself in war.

On the few occasions when the writer has been under very heavy fire, he did not find his instinct by any means an infallible guide, and would gladly have welcomed someone whose instinct had been fortified with practical experience. This latter cannot be had in peace except by means of the tactical—topographical problem. To hark back however for a minute to those who assert all will go right in war and hang peace problems. I well recollect, when once carrying out these exercises, an officer who had been issued a small problem, saying "Oh, if only I had a troop (the problem involved a troop) with me on service I could do the thing all right."

I promptly formed a troop out of the remaining officers and said: "Very well, here is your troop; now do it. You can picture to yourself as many bullets as you like". Needless to say he had no more idea what to do with four and twenty men staring him in the face, than he had when facing the director alone. I am of opinion that very often this is the case. To go a step farther, why, when the air is thick with bullets and shells, should our friend have developed an extraordinary instinct for right thinking and acting—It seems to me the mind was much more likely to become a blank.

It is readily admitted that a man may shine as a solver of tactical problems in peace time and fail utterly in war, simply because he lacks the desire for an armed conflict, or feels so thoroughly distrait when brought face to face with the reality that his mind goes. That is no argument for proving that a man who fails under peace conditions will shine in the field, and I for one do not believe that a man, whose mind is a blank in peace will find it any less of a blank in war. His pluck and grit may save him from censure for bungling his mission, but that is all.

Again the argument that tactical instruction, without the presence of actual troops in the exercise, is unrealistic and likely to create a wrong impression, is false. Indeed I go so far as to assert that the very reverse is the case: that the presence of troops in a tactical exercise under peace conditions at once creates an air of unreality, and I am of opinion that tactical instruction by means of tactical exercises without troops affords infinitely better practice than the actual handling of troops. On one occasion I went into action with my squadron and in under 15 minutes lost 60 per cent of it. I had never during peace conditions practised that.

Practising casualties in peace time is more than difficult. It is quite easy, however, to make their presence felt in a tactical exercise.

It may be pointed out that all armies are organised on the "three or four man command" system. Generalissimos command three or four groups of armies, Army group Commanders two or three Corps and so on down to Platoons and troops. The man who directly commands the greatest number of men in the Cavalry arm is Section leader, for, if his section is complete, he has seven men directly under him.

Thus, if it is proposd to carry out a series of tactical exercises which involve the handling of a troop, provided three or four persons are present at a tactical exercise, all the necessary elements in the way of personnel are forth-coming.

To test the troop leaders it is only necessary to provide three or four section leaders, or the troop leaders themselves can act as section leaders for one another in turn. A troop leader who tries to command each and every man in his troop will make as big a mess of affairs as the Generalissimo who tries to command Brigades.

There is, or was, a great deal of misappreheusion concerning tactical problems. I readily admit that many of those I have seen issued were not only valueless but positively harmful. This was due to lack of imagination on the part of those who drew them up, coupled with ignorance of how—so to speak—to stage manage the events.

It is hoped that the following notes, if unable to help the imagination, will anyhow assist in the art of stage management. The writer has had the experience of setting, and correcting some five or six hundred such exercises.

- (1). Tactical exercises for subordinate leaders are probably of greater value if carried out on the ground than if done indoors on maps. The state of the weather should not be allowed to interfere with this form of instruction. We fight in all weathers.
- (2). Every exercise should be drawn up with a view of inculcating some definite lesson.
- (3). He who prepares the exercise should go to the exact place where the exercise will be issued and, having prepared the exercise, should draw up its solution from the point of view of the solver.

A common mistake made is that the person who draws up the exercise, instead of working out the answer from the position and point of view of the solver, deliberately goes over the ground and thus evolves an official solution which, whilst being a superlatively good one, is incompatible with war conditions. In fact he has peeped behind the scenes.

It is extremely difficult to make those responsible for the preparation of these exercises understand that in war of movement—the only sort where cavalry is of any use—one cannot see behind the scenes with sufficient accuracy-to dictate tactical disposition: even air craft are unable to supply such information. At times the aeroplane may be helpful, but that is all.

As a rule tactical exercises are carried out in the vicinity of garrisons, with the result that those whose lot is to solve the problem are already in possession of an amount of local information, which they would not have at their disposal in war.

If "A" is aware that behind that hill there is an unfordable stream or an impassable bog, or that the Eastern spur of such and such a hill is the key of the position, half the good of the exercise vanishes.

There are, of course, many occasions in war, where the person responsible for the operations is congnisant of the most minute details connected with the tactical and topographical features of the country: such knowledge is of infinite value in preparing plaus for attack and defence. It will be comparatively rare that the persons for whom these exercises are contemplated will be in such a position; even if they are, the tactical exercises are of such a minor nature that the in formation will not be helpful unless the solver has at his disposal considerable time for contemplation—a rare situation for the mounted arm.

It is no unusual occurrence to see solutions to tactical problems handed in which, however perfect in themselves, are entirely based on knowledge which it is most improbable would be forthcoming in war.

This must be carefully guarded against. He who sets a tactical problem should see to it that the solutions put forward are based on data available under war conditions. In cases where it is deemed desirable to utilize local knowledge, such knowledge should be incorporated in the problem as information. Where it is deemed desirable to neutralize local knowledge, resort must be had to changing local conditions: viz convert tailways into canals, canals into railways; areas passable for all arms into morasses. I am well aware that this expedient is taboo, but I fail to see how fresh situations are to be evolved unless some such method is adopted. My advice on the subject is: avoid it whenever possible but do not hesitate to employ

it when, after two or three years in a cantonment, one is getting starved for fresh situations.

To recapitulate, the setter of a problem should first of all work out an official solution having regard to the point of view of the person who solves it, and in accordance with the information which that person should be in possession of. If the setter is himself new to the country this is easy enough. If he should happen to be the *oldest inhabitant*, it is extremely difficult to suppress his own local knowledge.

Having arrived at what he thinks is a good sound answer, he may then go over the area involved and looking at it from the enemy's point of view see if he has committed any obvious solecism. If he has; let it be. In nine cases out of ten it is a justifiable one, and it will be found that those under instruction will reproduce it: if they don't, then the setter has erred.

(4). Avoid lengthy General and Special ideas. A succinct narrative is often necessary, desirable and interesting to the solvers.

Once at a Regimental inspection I recollect a problem being set by a staff officer which had for its purpose the testing of a troop leader. The General idea was a great European Conflagration similar to what we are just experiencing, and an invasion of India involving a large force of hostile cavalry working its way Southwards to-wards Central India. The special idea, after a very lengthy narrative, eventually narrowed itself down to a troop acting as escort to a brace of field guns.

The story took fully ten minutes in the telling and the individual under examination got quite bewildered with details having no bearing on his share of the affair. Avoid such pitfalls.

(5). Avoid the very common mistake of setting problems involving forces which the solver will never in all likelihood be called upon to command.

This is an inherent defect beloved by many. By all means set exercises involving forces, which the solver may

command. e. g. A section leader may be called upon to command a troop, a troop leader a squadron. Even in this case, see to it that he first of all learns to handle his own command.

Duffer's Drift may be read with advantage when tempted to promote subordinates to the position of Brigade Commanders. The more simple the exercise the more useful it is likely to be.

The above five cautions are connected with the preparation of the exercise: I will now pass on to cautions connected with the carrying out of the exercises.

- (1). Take the weather as it comes. Wet, fog, and snow are met with in war and modify all situations. To work only under fair weather conditions is to create a wrong impression. Do not however seek bad weather. If a tactical exercise is down for Thursday the 10th February, carry it out regardless of the weather.
- (2). Having arrived at the appointed rendezvous, the director issues the exercise. He should see that everyone clearly understands it, and comprehends what is required. Do not allow those under instruction to peep behind the scenes. The replies must be prepared, handed in (if in writing), or verbally delivered, at the exact point where the situation presents itself-Example: The problem is one set to illustrate a certain action involving a patrol thrown out by the vanguard of an Advanced Guard.

The director in this case happens to be the troop leader who is exercising his section Commanders and Non-Commissioned Officers, say six in all, A, B, C, D, E, and F. The situation is one where the patrol has arrived in the vicinity of some high ground, reported occupied by an enemy patrol by Private B, now present by the patrol leader. The director should issue the exercise at a point where he considers the above information might reasonably reach the patrol leader. To continue:—one of the Non-Commissioned Officers, being deemed the patrol leader, should be made to give his replies

without moving more than a few yards from the spot, a suitable period being allowed for consideration. Now for the form which these replies should take:—

Assuming that the question asked is "What orders will you issue?", never permit this sort of reply. "Oh, I'd send Private Z to the other end of the hill from here and Private A to work up that gully and see what's up. I also think I would send in private P to my troop leader with a message."

Those Non-commissioned officers not called upon for an answer should be treated as the personnel of the patrol, or, if it is desired to exercise each Non-commissioned officer in replying to that particular question, then bring out four or five troopers to represent a section. It is better however to have a fresh situation for each Non-commissioned officer in turn, as no matter how strict a director may be it is difficult to avoid a committee solution, if four or five men give answers to the same situation.

It will be assumed that Sergeant A is to reply, and the questions set are.

- (1) How will your patrol be disposed?
- (2) What action will you take?

Sergeant A, having intimated that he is ready with his reply, comes up. If verbal it should take the following form.

Answer to question (1).

"Myself and two troopers here with the man who has brought in the information saying the high ground is occupied. Two troopers halted at the Northern extremity of the hill, and one trooper turning the South end of the hill".

Or whatever he considered suitable. Perhaps the entire patrol is concentrated with its leader; if so, the reply would be:

"All present here with me".

Answer to question (2), (assuming that the patrol is scattered as above), addressed to the patrol formed of the other Noncommissioned officers.

"Sergeant B. gallop to the North end of the hill and give this message to either of the men you find there.

"Push round the hill and see what is in occupation of it: the remainder of the patrol is moving round the south side. Having given the message rejoin me. Have you anything to ask?". If Sergeant Basks questions, all the better, but they must refer to the order he has just received and not be irrelevant; questions are part of the exercise.

"Trooper C, gallop to the troop leader whom you ought to find about helf a mile over in that direction and give him this message.

Hill north of river occupied by enemy's patrols; am reconnoitring it please return messenger."

By adopting this type of reply, one does away with the long rigmarole so beloved of many. That is, insist on definite clear cut statements as to dispositions, and distinct orders addressed, not to you as director, but to the person those orders would affect. It is just as well to explain this procedure before commencing operations by rehearing—so to speak—a tactical exercise and the director himself giving all replies. Now suppose the answer to question 2 involved the sending of a written message to the troop leader at some specific spot, the answer to that part would then run.

"Trooper C, take this message to the troop leader. You will find him at the Southern exit of the village we last came through,—over there".

The written message should be handed in complete in every detail. Never permit those under instruction to say " I would inform my troop leader to that effect"; if verbal the message must be made over to the bearer of it exactly as it would be if the bearer was actually to convey it; if a written one, it must be actually written out and handed to the bearer along with directions for ensuring its arrival. Indian officers should be encouraged to write their message in "Roman" urdu.

The director should criticise the answer to question 1 before dealing with question 2, remembering that, provided no fundamental principle has been transgressed, a wide divergence of opinion may be accepted.

I deprecate any discussion as to the correct reply, until the persons called upon to give answers have handed in their work.

After dealing with Sergeant A, the director now moves to the point where he proposes to issue his next situation.

Avoid calling for appreciations. The correct answer to the direct question "What will you do?" or "What action will you take?" or "How will your force be disposed?" ipso facto involves a conprehensive appreciation. Appreciations are valuable under certain conditions, but to over encourage them often means sacrificing the end (action) for the means (contemplation).

In order to increase the value of these tactical exercises it is essential that troop leaders should be themselves exercised as subordinates, otherwise they will be incapable of preparing such exercises.

Without in any way wishing to reflect on those who have been through our war schools, I cannot help remarking, that many of the problems I have seen drawn up by graduates of these establishments bore the unmistakeable stamp of lack of experience in this class of work.

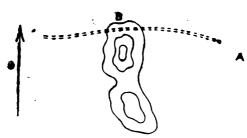
Those who have never occupied the position of patrol section, or troop leader, are very apt to treat such small formations with disdain. They are particularly liable to err badly when attempting to formulate tactical exercises for them. Therefore all young officers should be exercised as subordinates, so that when they go to the war schools, and leave them, they will thoroughly appreciate the requirements of these petty formations.

I now give two typical tactical exercises to exemplify the points touched on in this paper: that they are complete in all details is doubtful, but I think they will serve the purpose intended.

#### Tactical Exercise for a Section.

Present, the troop leader and his Non-commissioned officers; latter forming a section of six men.

General Idea.—(Hindustani, Am Khial) A Red reconnoitring detachment strength 1 squadron in a hostile country working Eastwards, country open and undulating with hills dotted here and there.



Special Idea.—(Hindustani Khas, Khial) The Red detachment has pushed out a patrol comprising one section to search for signs of the enemy in vicinity of A distant from Detachment Head Quarters about 8 miles.

The Red patrol on reaching the summit of the crest line at B sees a hostile (Blue) patrol of 8 men, distant about ½ mile, advancing towards B from A along the country cart track. The Blue patrol is evidently unaware that Red's patrol is at B and Blue is advancing at a trot in close order.

Question (1) to troop Sergeant Z acting as section leader. "What will you do?"

Now there are many things Sergeant Z might do.

I propose touching on a few of them in order to exemplify my remark that it is a mistake to imagine such exercises offer no scope for reflexion and varied action.

It is also a mistake however to ask Z, or any other persons undergoing instruction, to give alternative solutions. To encourage too much introspection of situations is to foster uncertainty. Strong minded stupid persons often make better military leaders than highly intellectual ones; the latter, being apt to see disaster in every move, do nothing, or worse, carry out their plans in a hesitating manner.

## Sergeant Z may:-

(1). Ambush the advancing party, that is endeavour to capture it intact by luring it into a position it cannot extricate itself from.

- (2). Withdraw under cover of the hill and seek a new line of approach to A.
- (3). Conceal himself and his section close to B and let the Blue patrol pass by him unmolested.
- (4). Dismount and, by shooting, compel it to flight.
- (5). Hide and charge it on approach.

There are probably other things he can do.

All above are possible, indeed each may be correct according to the nature of the terrain, temperament of the leader, and climatic conditions, and that is why I said these exercises are better carried out on the ground, than on maps indoors. Red's objective is A, not to seek conflict with Blue's patrols unless he cannot carry out his mission without fighting.

Suggestion (1) if successful means prisoners, who will reduce your party by at least 1 man. Having compelled a surrender it isn't *cricket* to butcher the lot: it has been done but is contrary to, I won't say international law, for there isn't such a thing, but to British instincts.

Success under No. 2 depends on the lie of the ground. A good eye for country may quickly grasp the right "line". If seen, you will be chased. No. 3 also offers a solution but neighing horses have an unhappy knack of giving the show away; this latter remark also applies to No. 1. To be successful the leader must get his patrol quickly into hiding, well away from the road. Can this be done?

Proposition 4 also offers a chance of success, but shooting means advertising far and wide that Red's troops are about.

No. 5 will not make much noise at the time of impact, but as the enemy are stronger by two men the enterprise, even if successful, will mean some hostile horseman escapes with the tale, and, further, it is inconceivable that Red gets off without a casualty.

There are probably many other considerations, and what poor Sergeant Z is to do depends on Sergeant Z's power of rapidly summing up the situation and promptly acting when once his mind is made up.

As already said it is impossible to give a solution to such a problem on paper: snow, rain, fog, wind, and hosts of other things may decide the question, not the least being the state of Sergeant Z's liver at the time.

Whichever course he adopts, he has to issue his orders to select a position or line of movement for his section.

Let him do this. On no account accept as an answer "I will ambush it". If such is Sergeant Z's solution, insist on the section being placed in ambush and all orders affecting its dispositions—there will be many—being clearly given out.

If on the other hand Sergeant Z decides on solution (4) let him issue his orders as to where the horses are to go; what sort of fire is to be employed; and where the dismounted rifles are to be located. Possibly Sergeant Z will select solution (2); if he does, let him take his section by the route he proposes, the director passing judgement on the handling of the section and the chance of the move escaping detection.

#### PHASE II.

Let it to be assumed that Sergeant Z selected solution No. 2, carried out the move with consummate skill, and having given the slip to his opponent, halts for a breather at some point or other.

The director now continues his advance towards A and wishing to drive home the system of bounds (proved correct in the war) examines each of the party in turn on his opinion of what should constitute the next bound.

The section having arrived at a certain point, one of its members, Lance Corporal X, reports that he sees a considerable bivouac of mounted troops to the East of A.

Question to Corporal Y. "What will you do?".

Answer by Corporal Y. addressing the section.

"The Section will halt where it is, whilst I accompany Lance Corporal X to the point where he saw the bivouac": The director—"Right—That will do, Corporal Y. Lance Corporal W., assuming that Corporal Y. estimates that there is a Cavalry Brigade in bivouac, what will you do?".

Answer by Lance Corporal W.—"I will send the following written message to my detachment commander". Lance Corporal W now asks to be given a few minutes to compile message, which is granted. Lance Corporal W hands in the following message.

A Squadron

Place.

No. 1 22-10-16. A hostile Cavalry Brigade is in bivouac \( \frac{1}{2} \) mile East of A aaa hostile patrol strength 8 men passed B Westward bound at 4 p. m. Am remaining in observation.

PATROL LEADER,

High ground & mile S. W. of A.

The director reads out the message and criticises any faults e. g.

"Lauce Corporal W. You've forgotten to sign message and to give the time of its despatch: both careless mistakes."

"Lance Corporal W. assuming the message is correct, now despatch it."

Lance Corporal W.—"Lance Corporal Y take this message to the Squadron Commander. Strike the road we came on and follow it Westwards. There's North (pointing it out) keep wide awake for that hostile patrol we gave the slip to. You'll find the squadron at xx, if not, then it has probably gone to xxx; follow it. I dont want you back again".

Lance Corporal W. now reads the message to Lance Corporal Y. who repeats it. "You are quite sure of it and have no questions to ask", says Lance Corporal W. "Quite", replies Y. "Very well, off with you".

"That will do" says the director...

Exercise ends.

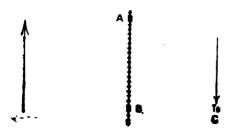
It was mentioned in the early part of this paper that it is a comparatively easy matter to introduce casualties into these schemes.

Supposing Sergeant Z had adopted solution 5 and was successful in so far as he captured or killed most of the Blue patrol. He had one man killed and two horses so severely injured that they had to be destroyed.

This situation suggests a question of this sort.

Question; "Sergeant Z" your casualties are so and so; what will you do?."

Tactical exercise for 1 Troop—present the troop leader, (as director), troop sergeant, and three section leaders.



#### GENERAL IDEA.

A squadron with a special mission to interrupt communication on the Enemy's Railway Line at the points A and B (stations) is approaching A from the West. En route it detached a troop to the small wayside station of B some 8 miles South of A with orders to do as much damage as possible and rejoin squadron Head Quarters A by 4 p. m. A hostile squadron is reported at C. Country open and slightly undulating. Twenty pounds of gun cotton with usual demolition accessories are handed over to the troop leader.

#### SPECIAL IDEA.

The troop arrives unobserved in the vicinity of B at 12 noon at which hour the squadron is due at A. The troop halts about half a mile West of B.

Question (1) For troop sergeant Z as troop leader. "What will you do?".

A problem of this nature offers many solutions; that is, there are many ways of carrying out the mission, viz: the destruction of the Railway. The task can, however, be resolved

into two or more distinct phases: namely (1) the seizure of the Station and its precincts (2) the demolitions; and, if the enemy interfere, a third phase will obtrude itself.

Again (2) may probably be subdivided into (a) destruction of buildings (b) destruction of the permanent way (c) destruction of watering facilities. All these matters should be carefully considered by the director when preparing the exercise, so that he knows exactly where to stop one man and tell another to carry on.

I do not recommend setting the questions piece meal as above; that is, to ask Sergeant Z what he will do up to and including making himself master of the Station premises. To put the question like that practically gives Sergeant Z the answer. It may be urged that the seizure of the Station is so obvious that there is no harm in indicating this, so to speak, first bound. There is every harm: Sergeant Z may select some other preliminary procedure. Therefore let Question (1) be put as it is put in this paper, the director being ready to stop Sergeant Z the moment Sergeant Z has proceeded far enough. The remainder of the questions will be put as the situation developes.

Let it be assumed that Sergeant Z having considered his reply addresses the remainder of those under instruction as follows:—

"I intend to seize the Railway Station and do as much damage as possible between now and 3 p. m.

Lance Corporal P take two men of your section and gallop to the south distant signal post (point it out) keeping out of view of the Railway Station as much as possible; cut all the telegraph wires; you've got your cutters. Having done that, put one man up the distant signal post or any other high object close by with orders to keep a sharp look out to the South.

As soon as I see your man at work on the wires, I will gallop to the Station, halt and dismount under cover of that wall (point it out) and accompanied by Corporal Q and his section seize the station master and station officers.

Troop sergeant R (addressing the director) you will stay with the remainder of the troops and, if you hear any shooting

and I don't send some one out at once to say all's right, you must set as you think best, remembering it's up to you to carry out the squadron commander's orders if I am outed. Do you all understand your orders?"

If any wish to ask questions, they must do so. Very often some obvious and necessary point is omitted but the questions asked must not be of a nature contravening the orders e.g. Lance Corporal P may justifiably enquire if he will be relieved, but he should not be permitted to say "I dont see how I can get to the signal post unseen, Sergeant". If all understand the orders the director now says "that will do Sergeant Z". The director now criticises Sergeant Z's orders if criticism is necessary. It will be assumed that Sergeant Z's orders are approved, so the director says "now Lance Corporal P., taking Corporal Q and Sergeant Z as your two men, we will all accompany you to the signal post". The director makes for the Signal post—taking care to note Lance Corporal P's dispositions to keep concealed from view.

On arrival at Signal Post, Lance Corporal P issues his orders, as follows:—

"Corporal Q get up that telegraph post and cut the wires. Sergeant Z hold the horses. I am climbing the signal post to have a look round"

Corporal Q can swarm up the post just to see how difficult a job that sailor, like accomplishment is; and how difficult it is to cut wires in such a position. The director now criticises Lance Corporal P's work. Having done so the party retrace their steps to where the original orders were issued. On arrival the director resumes: "Sergeant Z, assuming one of Lauce Corporal P's men is now visible cutting the wires, carry out your part of the work, namely the seizure of the Station".

Sergeant Z promptly gallops to the Station accompanied by the director and rest of party. They are suddenly confronted with a wire fence enclosing the station yard on the West side and the gate, an iron one, is padlocked. The director—" Well Sergeant Z! now what will you do?" Sergant Z: "cut the wires with my clippers and make for the wall". The director—Lance Corporal P, supposing the only pair of clippers have gone to the signal post—(quite probable)—what will you do? Remember every moment is precious, and you are only 100 feet off the Station house."

Lance Corporal P. "Put my rifle muzzle against the staple holding the chain of the gate and fire a round—it will cut it right through". The director. "Any other suggestions for overcoming this upset in our plans?"

None being forthcoming the party enter the yard and collect under cover of the wall originally pointed out by Sergeant Z and dismount.

The director "Now sergeant Z you've got your two sections here, seized the Station Master and telegraph officer, commandeered any tools there are: what will you do?"

Sergeant Z "Leave Corporal Q with the Station Master etc. and returning to the led horses issue following orders:—

Sergeant R get the led horses over there under the trees: tie them up and loosen girths. Leave one man in charge and fall in the rest on the platform. Put one man up the home signal post as a general look out in touch with Lance Corporal P's party. In the mean-

• while I will make an inspection of the Station with Corporal Q's men and see what damage we can do with the stuff at our disposal."

The director: "That will do Sergeant Z. Corporal Q, Do you think it advisable trying to get into communication with Squadron Headquarters by means of telegraph"?

Corporal Q "No Sir; if the squadron was delayed in its arrival at A, such action on my part would warn the Railway people at A to be on the look out."

The director—" True, but its quite possible the Station Master here would have had time to warn A before being seized in which case your caution is wasted. On the whole I think it wiser to await the squadron calling us. Remember in all these

cases the fact of the telegraph instruments being of foreign pattern may prevent their use."

At this point the Director, knowing that none of the party have had previous experience either practical or theoretical, in the rapid destruction of a Railway Station, passes from questioning to one of direct instruction.

Accompanied by his party he makes a rapid survey of the station yard, notices the line is a single one and shunting accommodation at the Station is very limited. There is a big culvert immediately on the Southern side of the Station, a water tank containing 45,000 gallons, with a well, and steam pumping plant close by.

He discusses the most efficacious method of temporarily destroying the line by:—

- (1). Smashing the pumping gear.
- (1). Choking well with various debris.
- (3.) Blowing up the Water tank (half the gun cotton.)
- (4.) Blowing up the culvert (half of the remaining gun cotton.)
- (5.) Smashing all telegraph plant and burning the Station house.
  - (6.) Derailing any iron rolling stock and burning wooden.

This completes the exercise, which can be rendered more realistic by employing dummy gun cotton detonators and fusing (if permission of the Railway Company can be obtained.)

A further air of frightfulness can be introduced at the point where Sergeaut Z seizes the Railway Station, by creating casualties as follows.

The Director, addressing one of the party other than Sergeant Z. "Just after Sergeant Z enters the Station you hear several shots in the Station and one of Corporal Q's men comes running out wounded, saying Sergeant Z has been shot dead and Corporal Q is wounded. What will you do?"

I have selected above exercise because it embodies two distinct types of instruction, viz question, answer and direct instruc-

tion. One can have too much of the former, and a leavening of the latter relieves the strain for both the director and the directed.

### AUTOMATIO WEAPONS.

BY

LIEUTENANT-COLONEL DE LA BERE.

A weapon is said to be automatic when, after once it has been loaded and fired by the operator, it continues to load or load and fire by inanimate forces, so long as the supply of cartridges contained in its magazine, belt, hopper, drum or strip is unexhausted.

The two types may be called "automatic or self loaders' and "automatic firers".

The first principle is suitable for all automatic weapons, the latter for machine guns and in a lesser degree for machine rifles, but is unsuitable for automatic rifles and pistols.

Three classes of Automatic weapons may be classified con-Automatic weapons. veniently according to their weights.

- 1. Machine guns above 25 lbs.
- 2. Machine rifles from 10-25 lbs.
- 3. Automatic rifles up to 10 lbs.
- 4. Automatic pistols about 7½ lbs.

The role and characteristics of these four classes are quite distinct.

- 1. Machine guns are provided with a steady mounting and are capable of delivering a concentrated fire of considerable duration up to long distances. They require some form of transport, draught or pack, for the carriage of the gun, mounting, and ammunition.
- 2. Machine rifles are supported by a bipod or tripod, attached to the barrel near the muzzle, the butt of the rifle being supported by the firer. Consequently, they are somewhat unsteady whilst in operation and are designed for use at close ranges, where, owing to its comparative invisibility and portability, the weapon is capable of delivering short bursts of fairly concentrated and very rapid fire on favourable targets. It is a weapon of surprise especially suitable for flank offence and defence.

The Machine rifle and its ammunition are carried by soldiers.

- 3. Automatic Rifles are at present only in the experimental stage, but their employment would, owing to the cost and complicated nature of the weapon, be limited to certain selected soldiers per squadron or company; pushed up with the firing line, they would considerable increase the intensity of the fire.
- 4. Automatic Pistols are for offence and defence at close ranges up to some 50 vards.

Advantages and The advantages of automatic weapons may disadvantages of be summed up as follows:—
automatic system.

- 1. Celerity of loading and increased volume of fire.
- 2. Less abstraction on the part of the firer, as he has only the replenishment of ammunition, aiming and pressing the trigger to attend to.
- 3. Less fatigue on the part of the firer.
- 4. In certain cases possibly less recoil.
- 5. Decreased likelihood of detection owing to absence of movement in working the weapon.

Disadvantages of automatic systems: -

- A greater number and more complexity of component parts.
- Liability to jamb or to become inoperative owing to failure of the mechanism or entrance of extraneous substances.
- 3. Heating of the weapon and violent ejection of hot cartridges.
- 4. In the case of automatic rifles, difficulty in arranging for a satisfactory attachment of the bayonet.
- 5. Difficulties of ammunition supply.
- 6. Increase of cost.

All automatic weapons should possess the following characteristics:—

Desiderate of automatic systems.

Certainty of automatic action whether the weapon be cold or

hot.

2. Automatic action not to be violent.

- 3. Strength of all parts of the automatic action.
- 4. A reserve of force to overcome increased friction or weakness of recuperating springs.
- 5. Should the automatic action fail the weapon should be capable of being operated by hand.
- 6. Action must be positively locked (i.e. the bolt or block must be locked to the barrel) at the moment the round is fired.

Automatic weapons are actuated by the force exerted by

Method by which the explosion of the cartridge. This force
automatic action exerts itself in every direction, it forces the bullet into the grooves and through the barrel,
it expends the cartridge case against the walls of the chamber
and it drives the cartridge case back against the bolt or block.

Two methods of Automatic weapons employ this force in two utilizing this ways:—

- 1. Recoil operated weapons.
- 2. Gas operated weapons.
- 1. In recoil operated weapons the force of the recoil of the weapon or a portion of the same is utilized to open the breech, eject the fired case, load, cock the mechanism, if "automatic loaders", and fire the cartridge in addition if "automatic firers".
- In gas operated rifles a small portion of the gas is utilized to carry out the above mentioned operations.

Advantages and The advantages of recoil operated weapons disadvantages of are:—
the two systems.

- 1. More compact than gas operated weapons.
- 2. Less recoil, consequently action not so violent.
- 3. Working parts not liable to corrosion from residue of gases.

Disadvantages of recoil operated weapons:-

1. No reserve force to overcome increased friction.

The force available and the weights of the moving portions remain practically constant but the "energy" required may vary according to presence or absence of lubricating substances or extraneous matter in the bearings.

Pressures will vary in some degree according to the heating of the chamber and uniformity of the charge.

Advantages of gas operated rifles.

- 1. By regulating the amount of gas admitted to the cylinder or the size of the cylinder itself, extra friction can be overcome and "energy" increased.
- 2. Ballistics not interfered with.

Disadvantages of gas operated rifles:-

- 1. The vent, gasport, cylinder and piston are liable to become coated with fouling and the residue of the gases, necessitating the stripping of the weapon to clean these parts.
- 2. Violent in their action.

The gases issue from a very small hole about 10th inch in diameter pierced underneath the barrel near the muzzle. Consequently they act for a very short period, namely, until the bullet has left the muzzle; in consequence of this their action is very violent. If the barrel was pierced nearer the breech, the pressure would be all the more violent, as the gases would be under greater compression. The size of the vent cannot be increased as it must not be of greater diameter than the width of the grooves; were this the case the lands would be worn away.

3. Extraneous adjuncts such as gasports, cylinders, pistons and connecting rods must be attached to the weapon.

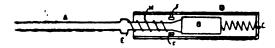
Diagrams illustrating Recoil operated weapons.

Figure 1
Fixed Barrel.



The explosion of the cartridge in the barrel A drives back the bolt or block B contained in the body C compressing the spring D. On the spring extending, the bolt or body is driven forward against the face of the barrel. The above system is only suitable for small pistols and is apt to introduce an element of danger; should the spring D become weak or a cartridge give excessive pressures, the powder gas will escape to the rear before the bullet has cleared the muzzle.

Figure 2. Short Barrel Recoil.



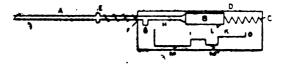
The barrel A, being positively locked to the bolt or block B. is carried back with that component by the action of the backward thrust of the cartridge. A barrel recoil spring H is compressed between two shoulders F, F, on the body D and the projection E on the barrel. When this spring is fully compressed the barrel stops owing to the projection E butting against the shoulders F, F. During this backward motion the bolt B is rotated by a system of lugs working in helical cut slots in the body, thus unlocking the barrel and bolt or block. The bolt or block continues its travel to the rear compressing the bolt "recoil spring" C; during this motion of the bolt the empty case is ejected, the action is cocked, a fresh cartridge is fed up into the bolt way; the barrel recoil spring carries the barrel forward again. On the bolt recoil spring extending, the advancing bolt carries the cartridge forward into the chamber and the weapon is ready to fire again, on the trigger being pressed. the weapon is set for automatic fire a system of trip levers, or some similar contrivance, is fitted which enables the weapon to be fired by the sear instead of the trigger. So long as the trigger is pressed it will become inoperative.

It is evident that the timing of the above operations must be very carefully and accurately adjusted. If the barrel is unlocked too soon, the action of the firer may be damaged by the force of

the powder gas escaping to the rear; if the recoil of the barrel and bolt is unduly delayed, the bullet will have emerged from the muzzle and the force of the powder gas will be nullified. Again, if the bolt advances too quickly, then the feed will be faulty, as the empty cartridge case will not have been ejected and a fresh cartridge will not have had time to have risen into the bolt way.

This timing is influenced by so many factors that it has created great difficulties in producing a satisfactory automatic rifle, in which weapon the springs, bolt or body must be of such a weight that the whole arm does not exceed 10 lbs. When it is considered that the pressure on the head of the bolt in modern weapons is from 20-24 tons per square inch, it will be understood that a very violent thrust has to be withstood and absorbed. If too much of this shock is absorbed by the firer the aim will be displaced and the strain on the operator will be increased.

Figure 3.
Long Barrel Recoil.



In weapons operated by the "long barrel recoil", the barrel A is positively locked to the bolt or block B and recoils with it to its fullest extent, compressing the "barrel spring" F and the bolt or block recoil spring C; towards the termination of this movement the bolt rotates unlocking that component. The barrel acted on by its spring returns to the firing position, and the cartridge case is ejected, but the breech is held back by a system of trip levers, the projection O engaging in a tooth 'K' cut in the bolt. When the barrel is nearly home the stud 'G' on the barrel presses down the projection 'H' on the trip lever against the spring M. This permits the lever 'L O' to rotate, actuated by the spring M lowering the projection O, and permitting the bolt to fly forward, actuated by its spring 'C' pushing a fresh

cartridge into the chamber.

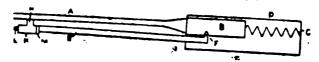
Advantages of Long Recoil action .--

- 1. Less chance of the breech opening before the bullet has left the muzzle, as the barrel and bolt remain locked for a longer period.
- 2. Greater weight of recoiling portion absorbing more energy of recoil and by its increased weight possessing greater power of overcoming friction.

Disadvantages of Long Recoil system.—

1. The necessity of a system of trip levers increases the number of components required and adds to the weight and complexity of the action.

Figure 4.
Gas Operated Mechanism.



The barrel A is fixed and is positively locked to the bolt or block B. A minute hole H is bored in the underneath portion of the barrel leading into a cylinder K in which is sited a piston M. A screw plug L is inserted in the cylinder, by means of which the capacity of the cylinder can be varied. A piston rod O connects the piston M to the bolt B by means of a stud or projection F working in a helical slot. The first portion of this slot is cut parallel to the axis of the bore so that the stud in the piston does not rotate the bolt until sufficient time has elapsed for the bullet to leave the muzzle; thus retarding the opening of the breech. In some systems the piston rod is fitted with a special spring which forces it forward carrying the bolt or block with it; in others the bolt recoil spring C performs the operation of forcing the bolt piston rod and piston home.

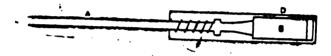
The ejection of the empty case and feed of the cartridge is performed in the same manner as in Recoil Operated Rifles.

The advantages and disadvantages of Gas operated Rifles have been discussed above.

Other systems have been designed for utilizing the force exerted by the explosion of the cartridge, but they have not been brought to a successful issue.

# Figure 5. Engraving of the bullet.

'The Mannlicher Pistols of early manufacture utilized the forward drag of the barrel owing to the bullet being forced into the grooves.



The barrel A rests against the bolt or block B contained in the body D.

On the barrel being dragged forward, it compressed the barrel recoil spring F. The empty case was ejected and a fresh cartridge fed up onto the face of the bolt or block.

Advantages of this system .-

 Eradication of risk to the firer as the bolt is not withdrawn from the barrel. The body protects the barrel during its forward travel.

Disadvantages of this system.-

- 1. The force exerted by the engraving varies according to the state of the bore; if the bore is worn, the force is gradually reduced. In any case the force exerted is insufficient to actuate barrels of a greater weight than those fitted to pocket pistols.
- 2. The cartridge in held in the extractor of the bolt and the barrel picks it up during its backward travel.

  This is an unsatisfactory method of feed, as the cartridge must be truly held in the extractor or it will jamb against the end of the barrel.

The system cannot be considered a practical solution of the automatic principle.

The utilization of the Inertia of a portion of the Mechanism.

The above principle has been utilized as follows:—

The barrel and bolt recoil together, but a heavy sleeve which covers the rear of the barrel and front of the bolt remains stationary, compressing a spring between its front face and a projection on the body; when the force of this compression overcomes the inertia, the sleeve is driven back by the spring, rotating the bolt, unlocking it from the barrel, and, compressing the bolt "recoil spring," ejecting the fired case. On the recoil spring recuperating, the bolt, sleeve and barrel are carried forward into the firing position, feeding up a cartridge during the motion.

Advantages of this system-

1. Simplicity of the mechanism.

Disadvantages of this system-

- 1. Increased weight of the weapon owing to the comparatively heavy sleeve.
- 2. Reliance on the recoil of the whole weapon: if the weapon is rigidly held the action fails.

The system, notwithstanding its ingenuity, is impractical. Utilization of the pressure of gas at the chamber.

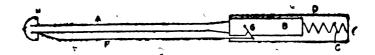
In some patterns of the Roth Pistol the cap of the cartridge is pierced by the striker; the escape of gas being utilized to drive back the latter, which, by means of feathers or projections, working in helical grooves cut in the bolt or block, rotate the latter, unlocking them from the barrel, driving them back against a recoil spring and ejecting the empty case. The recoil spring on recuperating carries the bolt forward again, performing the usual loading motions.

The advantages of this system are not apparent. The energies of inventors of guns and rifles have always been especially directed towards sealing of the breech and obtaining immunity from pierced caps or blow backs: yet, in this pattern, the inventor has intentionally and deliberately invited such a contingency.

It works satisfactorily in a lower powered pistol, but with heavier weapons and charges the action would fail and be fraught with danger to the firer. Again, any increased friction in the bearings will weaken the blow of the striker, causing miss fires.

By surrounding the muzzle of the weapon with a sliding cap, the blast of gas that issues from the muzzle can be utilized to effect the automatic action. The Bang rifle and Puteaux Machine Gun are examples of this principle.

Figure 6.
Utilization of the pressure of gas at the muzzle.



The barrel A is fixed. A sliding cap H is attached to the bolt B by a connecting rod F and a lever G.

The blast of gas forces the cap and rod forward rotating the lever and forcing the bolt to the rear against its spring C.

Advantages of this system.—

- 1. The muzzle velocity is slightly increased as the gases instead of being dissipated into the air are momentarily confined and still act on the base of the bullet.
- 2. The action is regular and less violent than in ordinary gas operated weapons.

Disadvantages of this system .-

- 1. The cap becomes rapidly corroded by the residue of the gas.
- 2. It is difficult to arrange for the attachment of the bayonet to a rifle operated by this principle.

# Hybrid Arms.

The barrel casing of the German Maxim Gun surrounds the front of the barrel which is splayed, a small hole being bored in the front of the casing for the passage of the bullet, and a space existing between the casing and the face of the barrel. The blast of gas is thus utilized to assist the recoil action.

The muzzle attachment for the Maxim and Vickers Gun in use in the British Army performs the same service.

There are patterns existing of Machine Guns in which a "Silencer" or "Flash absorber" is utilized to increase the force of recoil.

#### Automatic Machine Guns.

# Recoil operated.

(a) Fixed Barrel—Moveable block attached by recoil of the cartridge.

#### Austrian Schwarzlose

Weight 49 lbs.

Cooling arrangement ... water

Rate of fire ... 300 rounds per minute

Feed ... Belt.

#### Remarks.

A strong, well finished Machine Gun, requires a jet of oil to be projected into the chamber after each round to reduce the skin friction of the cartridge. The gun therefore requires a supply of water for the jacket and oil for the reservoir.

(b) Short Barrel Recoil.

#### Maxim

Weight ... 60 lbs.

Cooling arrangements ... Water

Rate of fire ... 500 rounds per minute

Feed ... Beit

Calibre ... 303 inch

Maxims are used by Great Britain, America, Germany, Portugal, Switzerland, Turkey, Bulgaria, Servia, Spain, Brazil, Greece, Italy and Russia.

Vickers—a lighter form of Maxim.

Weight ... 28 lbs. Cooling arrangements ... Water.

Rate of Fire ... 500 rounds per minute

Feed ... Belt.
Calibre ... '303 inch

used by Great Britain.

(c) Long Barrel Recoil

Hotchkiss ... Semi-automatic 47 m/m.

Vickers Maxim 57 m/m. Vickers Maxim semiautomatic 76 m m.

Automatic Machine Rifles acting on the Recoil principle.

# (a) Long Recoil

Madsen-Weight 17 lbs.

Cooling arrangements ... Radiator

Rate of fire ... 300 rounds per

minute

Feed ... Hopper of 25

rounds

Calibre ... ·303 inch

used by Denmark, Russia, Japan, Sweden.

Laird-Monteyne—Weight ... 17 lbs.

Cooling arrangements ... Radiator

Rate of fire ... 220 rounds per

minute.

Feed ... Magazine of 25

rounds

Short Recoil—

Nil.

Automatic Rifles acting on the Recoil principle.

Short Recoil

Mauser Model 1900

Braunuing

Maxim

Kjellman Mannlicher

Freddi Halle

Long Recoil

Quist -

Browning sporting Rifle

Schouboe.

As far as is known, no nation has adopted a satisfactory automatic rifle.

Machine Guns acting on the gas operated principle.

		<u> </u>					
Nation	••	Gun	Weight in lbs.	Cooled by	Rate of fire per minute	Feed	Calibre iu inches.
U. S. A.	•	Benet-Mer- cier	33	Radiator	500	Strips of 30	.303
Prance	•••	Puteaux	50	Nil	360	″ 25 ″	.315
Japan Belgium Great Britain	•••	} Hotchkiss	33	Radiator	500	″ 30 ″	256 & 300
U. S. A.	••	Colt	4	••	400	Belt of 250	.30 <b>3</b>
Great Britain	••	Lewis	26		500	Drum of 47	.303

Machine Rifles acting on the gas operated principle.

Nil

Automatic Rifles acting on the gas operated principle.

Mannlicher 1900

Berthier

Mondragon

Cei-Riggottei

Bang

German 1917

# Automatic Pistols.

The employment of the automatic action is peculiarly suitable for Pistols since both the energy and the weight of the recoiling portion can be kept within reasonable limits.

Advantages of Automatic Pistols.-

- 1. Self loading and rapidity of fire.
- 2. Ease and rapidity of recharging the magazine.
- 3. Less recoil and consequently less displacement of aim.
- 4. Breech remains open when magazine is empty.

The action of replacing a magazine can be performed very expeditiously; the magazine, on being pressed home, releases the bolt or block, which flies forward carrying a cartridge into the chamber. Most patterns carry the magazine in the butt of the Pistol.

A reliable safety arrangement is a necessity for an Automatic Pistol.

There are many pistols which work satisfactorily and are now obtainable in the open market.

To enumerate a few types.—

Pistols on the Recoil operated principle.

# Fixed Barrel.

Belgium	•••	Browning 1897 pattern.						
Denmark	•••	Bayard.						
U. S. A.	•••	Colt.						
Bergmann Pieper	•••	Mannlicher.						
Schwarzlose	•••	Schouboe Mauser 1910.						

Steyr.

Short Barrel Recoil.

Borchardt ... Savage ... Mauser 1896. Colt, Browning, Webley and Scott .32", .38", .45" Calibre, Mars, Parabellum.

Long Barrel Recoil.

Gabbet Fairfax 1900 pattern.

Roth 1900 pattern.

A comparative statement of the characteristics of the Service Revolver and a typical Automatic Pistol, the Webley and Scott .45" Calibre is attached.

		Service Revolver	Webley & Scott
		Webley Mark V.	Automatic Pistol.
Calibre	•••	44′	44′
Weight	•••	21bs 30 ozs.	21bs. 72 ozs.
Weight of recoiling portion	•••	• •••	16 1 ,,
Speed of recoiling portion	•••	•••	24.5 ft per sec.
Magazine holds or cylinder	•••	6	8
Length of barrel	•••	4"	5"
Diameter of bullet	•••	.455"	.455"
Weight	•••	.265 grains.	.255 grains.
Muzzle velocity	•••	640 f. s.	955 f. s.
Recoil spring or Main	•••	V. shape housed	V. shape housed
		in butt.	in butt.
Safety arrangements	•••	Rebound Hammer.	. Safety catch and
			Grip safety.

Distance of travel during which the bolt and barrel are positively locked ...

**!**!!

# Conclusion.

It will be seen that Automatic Machine Guns and Automatic Pistols are in existence and form portion of the armament of practically every nation. Machine Rifles are used by many nations and are still undergoing improvements. Automatic Rifles are still in the embryo stage. In considering Machine Guns, if it is desired to deliver long continued bursts of fire at long distances, we must cool the barrel by means of water radiation alone will not suffice; further, we must provide our gun with a steady platform. These two factors add to the weight and necessitate pack transport.

Machine Rifles are peculiarly suitable for cavalry, as they can be carried in a bucket and one Machine Rifle will equal from 15 to 20 dismounted troopers in intensity and volume of fire.

Automatic Rifles will doubtless at some future time beperfected, a fact which will induce some nation to adopt them as a portion of its armament. It may be assumed, as a logical sequence, that the remainder of the competing nations will be forced to follow suit.

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1. The MacGregor Memorial Medal was founded in 1888 as a memorial to the late Major-General Sir Charles MacGregor. The medals are awarded for the best military reconnaissances or journeys of exploration of the year.

2. The following awards are made annually in the month

of June:-

(a) For officers—British or Indian—a silver medal.

(b) For soldiers—British or Indian—a silver medal, with Rs. 100 gratuity.

3. For specially valuable work a gold medal may be awarded in place of one of the silver medals, or in addition to the silver medals, whenever the administrators of the fund deem it desirable. Also the Council may award a special additional silver medal, without gratuity, to a soldier, for special good work.

4. The award of medals is made by His Excellency the Commander-in-Chief as Vice-Patron, and the Council of the United Service Institution, who were appointed administrator of

the Fund by the MacGregor Memorial Committee.

5. Only officers and soldiers belonging to the Army in India (including those in civil employ) are eligible for the award of the medal.*

6. The medal may be worn in uniform by Indian soldiers on ceremonial parades, suspended round the neck by the ribbon issued with the medal.

#### Note.

- (i) Personal risk to life during the reconnaissance or exploration is not a necessary qualification for the award of the medal; but in the event of two journeys being of equal value, the man who has run the greater risk will be considered to have the greater claim to the reward.
- (ii) When the work of the year has either not been of sufficient value or has been received too late for consideration before the Council meeting, the medal may be awarded for any reconnaissance during previous years considered by His Excellency the Commander-in-Chief to deserve it.

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1890...Younghusband, Capt. F.E., King's Dragoon Guards.

1891...Sawyer, Major H. A., 45th Sikhs.

RAMZAN KHAN, Havildar, 3rd Sikhs.

1892...VAUGHAN, Capt. H. B., 7th Bengal Infantry.
JAGGAT SINGH, Havildar, 19th Punjab Infantry.

1893...Bower, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).

FAZALDAD KHAN, Dafadar, 17th Bengal Cavalry.

1894...O'SULLIVAN, Major G. H. W., R.E.

MULL SINGH, Sowar, 6th Bengal Cavalry.

^{*} N. B.—The terms "officer" and "soldier" include those serving in the British and Indian armies and their reserves; also those serving in Auxiliary Porces, such as the Volunteers and Corps under Local Governments, such as Prontier Militia, Levies and Military Police, also all ranks serving in the Imperial Service Troops.

MacGregor Memorial Medallists—contd.

1895...Davies, Capt. H. R., Oxfordshire Light Infantry. Ganga Dyal Singh, Havildar, 2nd Rajputs.

1896...COCKERILL, Lieut. G. K., 28th Punjab Infantry. GHULAM NABI, Sepoy, Q. O. Corps of Guides.

1897...SWYAYNE, Capt. E. J. E., 16th Rajput Infantry. SHAHZAD MIR, Dafadar, 11th Bengal Lancers.

1898... WALKER, Capt. H. B., Duke of Cornwall's Light Infantry.
ADAM KHAN, Havildar, Q. O. Corps of Guides.

1899...DOUGLAS, Capt. J. A., 2nd Bengal Lancers.
Mihr Din, Naik, Bengal Sappers and Miners.

1900...WINGATE, Capt. A. W. S., 14th Bengal Lancers.
GURDIT SINGH, Havildar, 45th Sikhs.

1901...BURTON, Major E. B., 17th Bengal Lancers.
SUNDAR SINGH, Colour Havildar, 31st Burma Infantry.

1902...RAY, Capt. M. R. E., 7th Rajput Infantry.
TILBIR BHANDARI, Havildar, 9th Gurkha Rifles.

1903...MANIFOLD, Lieut.-Colonel C. C., I.M.S.
GHULAM HUSSAIN Lance-Dafadar, Q. O. Corps of Guides.

1904...Fraser, Capt. L. D., R.G.A.
MOGHAL BAZ, Dafadar, Q. O. Corps of Guides.

1905...Rennick, Major F., 40th Pathans, (specially awarded a gold medal).

Madho Ram, Havildar, 8th Gurkha Rifles.

1906...Shahzada Ahmad Mir, Risaldar, 36th Jacob's Horse. Ghafur Shah, Lance-Naik, Q.O. Corps of Guides Infantry.

1907...NANGLE, Capt. M. C., 92nd Punjabis.
SHEIKH USMAN, Havildar, 103rd Mahratta Light Infantry.

1908...GIBBON, Capt. C. M., Royal Irish Fusiliers.
MALANG, Havildar, 56th Punjabi Rifles.

1909...Muhammad Raza, Havildar, 106th Pioneers.

1910...Sykes, Major P. M., C.M.G., late 2nd Dragoon Guards (specially awarded a gold medal).
TURNER, Capt. F. G., R.E.

KHAN BAHADUR SHER JUNG, Survey of India.

1911.. Leachman, Capt. G. E., The Royal Sussex Regiment.
GURMUKH SINGH, Jemadar, 93rd Burma Infantry.

1912...PRITCHARD, Capt. B.E.A., 83rd Wallahjabad Light Infautry (specially awarded a gold medal).
WILSON, Lieut. A. T., C.M.G., 32nd Sikh Pioneers.

MOHIBULLA, Lance-Dafadar, Q. V. O. Corps of Guides.

1913...ABBAY, Capt. B. N., 27th Light Cavalry.

SIRDAR KHAN, Sowar, 39th (K.G.O.) Central India Horse.

WARATONG, Havildar, Burma Military Police (specially awarded a silver medal).

1914...BAILEY, Capt. F. M., I.A. (Political Dept.)
MORSHEAD, Capt. H. T., R.E.
HAIDAR ALI, Naick, 106th Hazara Pioneers.

1915.. WATERFIELD, Capt. F. C., 45th Rattray's Sikhs. ALI JUMA, Havildar, 106th Hazara Pioneers.

1916...ABDUR RAHMAN, NAIK, 21st Punjabis.

ZARGHUN SHAH, Havildar, 58th Rifles (F. F.)

(Specially awarded a Silver Medal).

1917...MIAN AFRAZ GUL, Sepoy, Khyber Rifles.

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# PRIZE ESSAY GOLD MEDALLISTS.

(With rank of Officers at the date of the Essay).

18/2...ROBERTS, Lieut.-Col. F. S., v.C., C.B., R.A.

1873...COLQUHOUN, Capt. J. A. S., R.A.

1874...ColQuhoun, Capt. J. A. S., R.A.

1879...St. John, Maj. O. B. C., R.E.

1880...BARROW, Lieut. E. G., 7th Bengal Infantry.

1882... MASON, Lieut. A. H., R.E.

1883...COLLEN, Maj. E. H. H., s.c.

1884...BARROW, Capt. E. G., 7th Bengal Infantry.

> 1887...YATE, Lieut. A. C., 27th Baluch Infantry.

1888...MAUDE, Capt. F. N., R.E.

Young, Maj. G. F., 24th Punjab Infantry (especially awarded a silver medal).

1889...Duff, Capt. B., 9th Bengal Infantry.

1890... MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.

1891...CARDEW, Lieut. F. G., 10th Bengal Lancers.

1893...Bullock, Maj. G. M., Devonshire Regiment.

1894...CARTER, Capt. F. C., Northumberland Fusiliers.

1895... NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.

1896...BINGLEY, Capt. A. H., 7th Bengal Infantry.

1897...NAPIER, Capt. G. S. F. Oxfordshire Light Infantry.

1898... MULLALY, Maj. H., R.E.

CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).

1899...Neville, Col. J. P. C., s.c.

1900...THULLIER, Capt. H. F., R.E.

LURBOCK, Capt. G., R.E., (specially awarded a silver medal).

1901...RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.

1902... TURNER, Capt. H. H. F., 2nd Bengal Lancers.

1903...HAMILTON, Maj. W. G., D.S.O., Norfolk Regiment. BOND, Capt.R.F.G., R.E., (specially awarded a silver medal).

1904...MACMUNN, Maj. G. F., D.S.O., R.F.A.

1905...Cockerill, Maj. G. K., Royal Warwickshire Regiment.

1907...WOOD, Maj. E. J. M., 99th Deccan Infantry:

1908...JEUDWINE, Maj. H. S., R.A.

1909...MOLYNEUX, Maj. E. M. J., D.S.O., 12th Cavalry.

ELSMIE, Maj. A. M. S., 56th Rifles, F. F., (specially awarded a silver medal).

1911...Mr. D. PETRIE, M.A., Punjab Police.

1912...CARTER, Major B. C., The King's Regiment.

1913... THOMSON, Major A. G., 58th Vaughan's Rifles (F. F.)

1914...BAINBRIDGE, Lieut.-Col. W.F., D.S.O., 51st Sikhs, (F. F.)
NORMAN, Major C. L. M.V.O., Q. V. O. Corps of Guides
(specially awarded a silver medal).

1915...No award.

1916...CRUM, Major W.E., V.D., Calcutta Light Horse.

1917...Blaker, Major W. F., R. F. A.

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All papers must be written in a clear, legible hand, and only on one side of the paper All proper names, countries, towns, rivers, etc., must, when in manuscript, be written in capital letters. All plans must have a scale on them.

Contributors are responsible, when they send articles containing any information which they have obtained by virtue of their official positions, that they have complied with the provisions of A. R. I., Vol. II., para. 487, and King's Regulations, para. 453.

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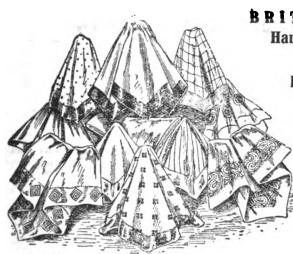
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6. Brig. Genl. R. E. Vaughan, C.B. *7. Lt. Col. H. Austen Smith, C.I.E. *8. Lt. Col. H. M. Alexander, D.S.O.

7. Lieut.-Genl. T.J. O'Donnell, C.B., D.S.O.,

8. The Hou'ble Surg.-Genl. W.R.Edwards

9. Brig. Genl. F.J. Moberly, D. s.o.

*10. Lieut.-Col. J.E. Tennant, M.C.

•9. Captain A. I. Sleigh. *Members of the Executive Committee; also

Brig. Genl. H. Barstow. Lieut. Col. G. L. Pepys, D.s.o. Major Sir C. W. Miles Bart. Colonel A. F. Cumberlege.

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2. Officers wishing to become members of the United Service Institution of India

should apply to the Secretary. The rules of membership are printed on the opposite page.

3. The reading-room of the Institution is provided with all the leading newspapers, magazines, and journals of military interest that are published. War maps are on view in the Reading Room, with the positious of the troops, so far as is known, marked with flags, in each theatre of war.

4. There is a well-stocked library in the Institution, from which members can obtain books onloan, free. Suggestions for new books are solicited, and will be submitted to the Committee. Books are sent out to members V. P. for the postage, or bearing

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> 5. The Institution publishes a Quarterly Journal in the months of January, April, July and October which is issued postage free to members in India and to all life members; but ordinary members wishing to have their journals sent to any address out of India must pay in advance Re. I per annum to cover foreign postage charges.

> 6. Members and the public are invited to contribute articles to the Journal of the Institution for which honoraria will be awarded by the Executive Committee. Rules for

> the guidance of contributors will be found on the opposite page.
> 7. MEMBERS ARE RESPONSIBLE THAT THEY KEEP THE SECRETARY CAREFULLY POSTED WITH REGARD TO CHANGES OF ADDRESS.

> 8. When on leave in England, members can, under the affiliation rules in force, attend the lectures and make use of the reading-room, etc., of the Royal United Service Institution, Whitehall, on payment of a subscription of 5 shillings per six months.

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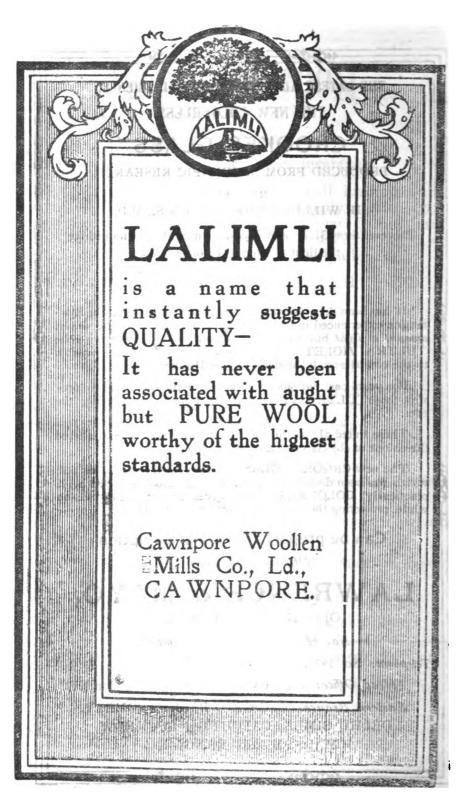
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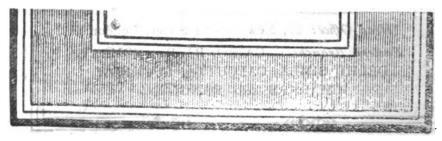
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## United Serbice Institution of India.

#### OCTOBER 1918.

#### SEORETARY'S NOTES.

#### I.—New Members.

The following members joined the Institution between the 25th June and 20th September 1918:—

#### LIFE MEMBERS.

Captain H. R. Traill.

Lieut. Colonel L. A. Grimston.

#### ORDINARY MEMBERS.

Lieut. Col. R. C. Heathcote. Major G. G. L. Mayo. Captain D. K. McLeod. Lieut. Col. H. R. Nevill. Lieut. Col. W. Carew-Smith. Major R. A. D. Sewell. Major G. Peddie. Captain E. H. Hudson. Captain W. H. Ruddle. Captain E. M. Burn. Captain L. H. Sewell. Captain A. I. Hodgson. Captain H. R. Lynch-Blosse. Lieut. E. E. Soden. Surgeon Major E. H. Hunt. Captain A. F. Joseph. Captain A. T. Stowell. Lieut. J. H. Cameron-Webb. Lieut. Col. L. L. Maxwell. Lieut. Col. V. E. Gwyer. Lieut. R. H. Hurst.

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#### IV.—Premia for Articles in the Journal.

Articles accepted for publication in the Journal are paid for, and a sum of approximately Rs. 400 is havaided for articles and reviews published in each Quarterly Journal.

#### V.—Contributions to the Journal.

With reference to Army Regulations, India, Volume II, paragraph 487, and King's Regulations, paragraph 453, as amended by Army Order 340 of 1913, intending contributors to the Journal of the United Service Institution of India are informed that action to obtain the sanction of His Excellency the Commander-in-Chief to the publication of any article in the Journal of the United Service Institution of India will be taken by the Committee. Contributors are, therefore, responsible that the sanction of their immediate superior has been obtained, and this should be noted on all articles sent for publication. Articles need not be submitted in duplicate.

Contributors must have their articles either typed or printed.

#### VI.—Library Catalogue.

The library catalogue revised up to 1st January 1916 is now available. Price Rs. 2 or Rs. 2-4-0 per V.P.P. A list of books received each year is published with the January Journal.

#### VII.—Gold Medal Prize Essay 1918-19.

The Council have chosen as the subject for the Gold Medal Essay for 1918 19 the following: -

The duties and organisation of the Indian Army after the War and its relation to the British Army.

The following are the conditions of the competition:

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- (3) When a reference is made to any work, the title of such work is to be quoted.
  - (4) Essays are to be strictly anonymous. Each must have a

motto, and enclosed with the essay there should be sent a **sealed** envelope with the motto written on the outside, and the name of the competitor inside.

- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1919.
- (6) Essays will be submitted for adjudication to referees chosen by the Council. No medal will be awarded if the Council consider that, the best essay is not of a sufficient standard of excellence.
- (7) The name of a successful candidate will be announced at a Council Meeting which will be held in September or October, 1919.
- (8) All essays submitted are to become the property of the United Service Institution of India absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays should not exceed about 15 pages of the Journal when X printed, exclusive of any appendices, tables or maps.

#### VIII.—War Maps.

War maps are on view in the Reading Room of the Institution with the positions of the troops, so far as is known, marked with flags, in each theatre of War.

#### IX.—List of New Books.

Recollections, by Viscount Morley. (2 Vols)		В	27 <b>7</b>
On the Eaves of the World, Reginald Farrer.	•••	F	354
Front lines, by Boyd Cable.	•••	ĸ	173
		_	16
Aircraft in War and Commerce. by W, H. Berry.	***	Ļ	10
Precis of Great Campaigns, 1796-1815, by J. H.			
Anderson.	•••	M	911
From Gallipoli to Baghdad, by W. Ewing, M. C.,			
D. D. (Chaplain to the Forces).	•••	M	912
History of the Hyderabad Contingent, by Major R.			
G. Burton.	•••	$\mathbf{M}$	913
The Bengal Native Army to the year 1895, by Lt.	F.		
G. Cardew.	•••	M	914
From Bapaume to Passchendaele, by Phillip Gibbs		M	915
The A. B. C. of Military Law, by Capt. F. D. Crierso		M	916
The Desert Campaigns, by W. T. Massey,	•••	M	917
Report on the Gaza Campaign of 1897 by Major	•••		
		M	918
Mousinho D' Albuquerque.	•••	TAT	210.
The Flags of our Fighting Army, by Stanley C.		_	
Johnson.	•••	O	202
The Year-Book of Wireless Telegraphy & Telephor	1y,		
by the Wireless Press.	•••	O	249
	-	Ř.	622
A Guide to Sauchi, by Sir John Marshall.	•••	7.	

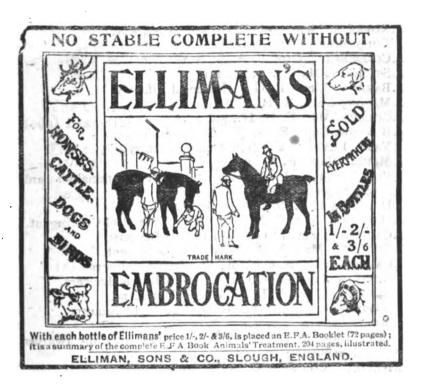
War according to Clausewitz, by Major-General T.		,	
D. Pilcher.	•••	S	431
Training Manual, Signalling (Provisional) Indian			
Supplement, 1915, General Staff, India.	•••	T	222
Signal Training, Part 1, Indian Supplement, 1917,			
General Staff, India, (2 copies.)	•••		448
	•••	T	447
Nelson's History of the War, has John Buchen		M	871
Volume XIX by John Buchan	•••	MI	0/1

#### X.—Gold Medal Prize Essay 1918.

The Gold Medal has been awarded to Captain A. V. Gompertz. M.C., R.E., the winning essay will be published in the January 1919 Journal.

#### XI.—MacGregor Memorial Medal 1918.

A silver medal has been awarded to Captain R.W.C. Noel, Political Department, for valuable reconnaissance work.



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## United Service Institution of India.

#### PRIZE ESSAY GOLD MEDALLISTS.

(With rank of Officers at the date of the Essay).

1872...ROBERTS, Lieut.-Col. F. S., v.C., C.B., R.A.

1873...Colquhoun, Capt. J. A. S., R.A.

1874...Colouhoun, Capt. J. A. S., R.A.

1879...Sт. John, Maj. O. B. C., R.E.

1880...Barrow, Lieut. E. G., 7th Bengal Infantry.

1882... Mason, Lieut. A. H., R.E.

1883...Collen, Maj. E. H. H., s.c.

1884...BARROW, Capt. E. G., 7th Bengal Infantry. 1887...YATE, Lieut. A. C., 27th Baluch Infantry.

1888... MAUDE, Capt. F. N., R.E.

Young, Maj. G. F., 24th Punjab Infantry (especially awarded a silver medal).

·1889...Duff, Capt. B., 9th Bengal Infantry.

1890... MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.

1891.: CARDEW, Lieut. F. G., 10th Bengal Lancers.

1893...Bullock, Maj. G. M., Devonshire Regiment.

1894...CARTER, Capt. F. C., Northumberland Fusiliers.

1895... NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.

' 1896...BINGLEY, Capt. A. H., 7th Bengal Infantry...

1897... NAPIER, Capt. G. S. F. Oxfordshire Light Infantry.

1898... MULLALY, Maj. H., R.E.

· CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).

1899...Neville, Col. J. P. C., s.c.

1900...Thullier, Capt. H. F., R.E.

LUFBOCK, Capt. G., R.E., (specially awarded a silver medal).

1901...RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.

1902... TURNER, Capt. H. H. F., 2nd Bengal Lancers.

1903... HAMILTON, Maj. W. G., D.S.O., Norfolk Regiment. BOND, Capt.R.F.G., R.E., (specially awarded a silver medal).

1904...MACMUNN, Maj. G. F., D.S.O., R.F.A. 🗸 💥

1905...Cockerill, Maj. G. K., Royal Warwickshire Regiment.

1907...Wood, Maj. E. J. M., 99th Deccan Infantry.

1908...JEUDWINE, Maj. H. S., R.A.

1909... MOLYNEUX, Maj. E. M. J., D.S.O., 12th Cavalry.

ELSMIE, Maj. A. M. S., 56th Rifles, F. F., (specially awarded a silver medal).

1911...Mr. D. PETRIE, M.A., Punjab Police.

1912...CARTER, Major B. C., The King's Regiment.
1913...Thomson, Major A. G., 58th Vaughan's Rifles (F. F.)

1914...BAINBRIDGE, Lieut.-Col. W.F., p.s.o., 51st Sikhs, (F. F.) Norman, Major C. L. m.v.o., Q. V. O. Corps of Guides (specially awarded a silver medal).

1915...No award.

1916...Crum, Major W.E., V.D., Calcutta Light Horse.

1917...BLAKER, Major W. F., R. F. A.

1918...Gompertz, Capt. A.V., M.C., R.E.

#### United Service Institution of India.

#### GOLD MEDAL ESSAY COMPETITION 1918-19.

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  - (9) Essays should not exceed about 15 pages of the size and style of the Journal, exclusive of any appendices, tables or maps.

By order of the Council,

SIMLA

Softh June 1918

G. AIRY, LT. COL.

Secretary, U.S. I. of India.

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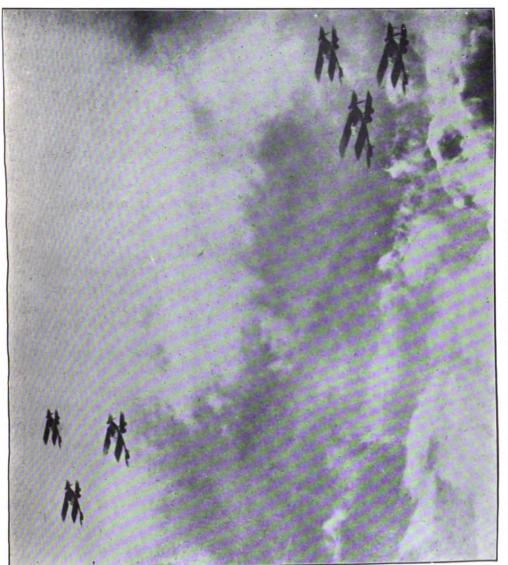
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## The Journal

OF THE

## Anited Service Institution of India.

Vol. XLVII. OCTOBER 1918.

No. 213.

## PRESENT CONDITION AND FUTURE OF THE ROYAL INDIAN MARINE.

By NEARCHUS.

The present War has once more brought into prominence the question of the status, utility, and possible future of the Maritime Service of the Government of India. The object of this paper is to examine the present position of that service, it's utility to the Government that maintains it and its future development or abolition.

When the Indian Navy was abolished in 1862, the Secretary of State in his Despatch, directing the striking of the Indian Naval Flag, recognised that a Maritime Service, manuel and equipped in accordance with local needs and conditions, was a necessity for the Indian Government, and he outlined his views on the subject in the following words:—

"The manner in which the Bengal Marine has answered the purposes of the Government of India proves that there are many Maritime duties which can the purposes with efficiency by a temporary service, fluctuating in numbers as the demand for vessels may increase or diminish, and Her Majesty's Government consider that such duties on the Western Coast of India hitherto performed by the Indian Navy, but for which it may not be convenient to employ ships of the Royal Navy, viz: the transport of troops and stores and other civil duties, can be performed for the future by a local Service, entitled the Bombay Marine, on the same footing as that on which the Bengal Marine has always been, and not under Martial Law."

Such was the order which resulted in the formation of the Bombay Marine, which subsequently amalgamated with the Bengal Marine and formed one Service under the title of "Her Majesty's Indian Marine," altered later to its present day designation of "Royal Indian Marine." The strength of the flotilla of vessels and officers and crews was determined from time to time by the necessities of Government. The vessels were usually built in England to special design, though one or two were acquired locally from private firms, and, on the score of economy, adapted in Government Yards. The officers were all appointed by the Secretary of State for India, being selected from amongst qualified sons of officers who had served the Government of India.

The main duty undertaken by the Marine Service in earlier days was the distribution of the Military reliefs which were then always brought to Bombay by the Troopships of the Royal Navy. The vessels of the Marine took these troops to Karachi, Madras, Calcutta, and Rangoon, and other Ports on the Coast of India, bringing back time-expired men for passage home from Bombay. The Surveying of the Indian Coasts was carried out by the Service under the supervision of Naval Surveying Officers, and a few Station ships were maintained for the use of Political Officers at out-stations. These comprised the chief duties of the Marine in the early history of the Service, but, as demand creates supply, so a demand for Transport Officers in the Egyptian Campaign and other Indian Expeditions gave the officers of the Marine Service their opportunity and first experience of War Service. remembered that the Despatch of the Secretary of State, already quoted, proposed that the new Service should not be under Martial Law. The appointment of officers of the Marine as Transport Officers to an Expeditionary Force, and certain other agreements between the Indian and Home Governments, necessitated an alteration in their status.

In 1884 the Indian Marine Service Act was passed. This gave the Governor-General in Council power to make laws for all persons employed or serving in or belonging to H. M's Indian Marine Service. Section 6 of the Act provides that in case of war any vessel of the Indian Marine and the officers and men serving on her, may, by Proclamation or Order-in-Council, be placed under the command of the Senior Naval Officer of the Station where, for the time being, the ship may be. While a vessel is under such command it is deemed to all intents a vessel of war of the Royal Navy and the officers and men belonging to her become subject to such Naval Discipline Act as may be in force at the time. In 1887 there was passed the Indian Marine Act which brought officers of the service under a discipline act, drafted on the lines of the Royal Navy. Notwithstanding this, however, the officers of the Royal Indian Marine have not been granted H. M's Commission, an anomaly which the Service has constantly endeavoured to get removed.

The better administration of the Service was secured by the passing of the above Acts and its efficiency and usefulness were correspondingly increased.

The assumption by the Royal Indian Marine of the complete charge of the Surveying Service of the Indian Seas took place in 1906, when Commander W. G. Beauchamp R. I. M. became the first Marine Officer in charge of the Marine Survey of India. Besides relieving the Royal Navy of providing officers for this duty, the transfer to the Royal Iudian Marine of this most important work was a flattering mark of the confidence of the Hydrographer to the Admiralty in the efficiency of the Survey work done by the Service. In each of the Expeditions which took place after the Egyptian Campaign, notably the Burma War, South African War, the Somaliland Expedition and the China Expedition, Government followed the precedent set, and appointed their Marine officers as Transport Officers to the Forces engaged from India, and the record and recognition by Government of these officers sufficiently proves the value of their services. It had become the recognised custom for transport work in the East to be entrusted to the Royal Indian Marine in the same way that the Royal Navy invariably accepts responsibility for the Sea Transport work of Expeditions Overseas directed by the War Office.

In recent years the work of transporting troops by sea on the Indian Coast has diminished, owing to the greater use of the Railways and the opening of Karachi as a trooping port, dealing with reliefs for the Punjab and for the North Western Frontier. The Royal Indian Marine Service possessed three large troopships and the decline of sea transport of troops on the Indian Coasts naturally threw them out of employment. They were employed, however, on a service similar to that for which they were constructed, by utilising them for a portion of the Imperial Trooping Service, and it became the rule for all regiments, moving in relief from India to Colonies East of the Cape of Good Hope, to proceed in Royal Indian Marine ships. It was in January 1897, on one of these voyages, that the memorable loss of the R. I. M. S. "Warren Hastings" took place on the Island Reunion in a thick fog. Although over 1,240 people had to be landed over the ship's bows, down a single rope ladder, not a soldier or woman or child was lost.

Such was the Royal Indian Marine Service on the out-break Its officers were under a Discipline Act, similar in character to that of the Navy, though they held no Commission from the King. Numbers of them were highly trained Transport officers, who had seen war service, and a large proportion had passed though Greenwich and the Gunnery, Torpedo, and Signal Schools of the Navy. Their two Dockyards were well equipped and had experts well experienced in the fitting out of Transports, either for men or animals, and possessed a stock of standard fittings, ordinarily sufficient for all contingencies, and they had a fleet of 8 sea-going vessels sufficient for the needs of India. They were carrying out such trooping duties as were required, and they filled all Local Government appointments as Port Officers and Engineer Surveyors at the 1st Class Ports of India. On the coast of Burma, and in the Persian Gulf, the Marine watched the efficiency of the Coast Lighting Service, and carried out periodical storing and reliefs. They continued to develope the modernising of all Indian Coastal Surveys and produced a continuous series of Charts as the results of their labours. Unquestionably for the

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- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Resays are to be strictly anonymous. Each must have a motto, and enclosed with the essay there should be sent a sealed envelope with the motto written on the outside and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1919.
- (6) Essays will be submitted for adjudication to Referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of the successful candidate will be announced at a Council Meeting to be held in September or October 1919.
- (8) All essays submitted are to become the property of the United Service Institution of India, absolutely, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays should not exceed about 15 pages of the size and style of the Journal, exclusive of any appendices, tables or maps.

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duties required of them, they were a well selected and efficient service.

Having briefly sketched the history and development of the Marine Service, from its commencement up to the time of the out-break of the present war, reference may be made to the value the Service was to the Government of India and the Empire at this crisis.

There were 3 large Troopships and 6 smaller Sea-going vessels on the strength and, by previous arrangement with Government, the 3 large vessels and 4 smaller ones were immediately handed over to the Royal Navy, armed with guns previously stored, and manned by Naval and Marine officers. These constituted a very useful accretion of strength to the Naval Forces in Indian waters at a time when a great strain was put upon them to provide escorts for the transports. On the other hand the Indian Government were deprived of the Services of their 3 best Troopships manned by officers and men trained in the transport of troops. In their place other ships had, of course, to be impressed and paid for. 3 of the smaller vessels, also, which would naturally have been detailed for use as Examination vessels or Patrols, were also lost to India, and other ships had to be found and paid for to fulfil these duties.

As regards the personnel of the Service on the out-break of war an immediate demand for its officers as Transport officers arose. Men were detailed and sent to Egypt, France, East Africa, and Mesopotamia on this duty, and had they not been available a further drain on Royal Navy personnel would have been necessary to meet the demand.

Even if such officers had been forthcoming (and it may be questioned whether the Admiralty could have spared them for Eastern areas of the war, with so many demands nearer home) they would have been ignorant of the language and customs of Indian Troops. And it must be remembered that the carriage of Indian Troops by sea is not such a simple matter as in the case of Europeans. Conditions

and requirements are entirely different, caste prejudices for instance having to be provided for on a ship as well as on shore.

The Marine, also in conjunction with the authorities, put into operation at all India's large ports an Examination Service and contributed largely to the supply of officers, men, and vessels for this necessary work. Survey Branch proved its value by undertaking Surveys in Mesopotamia as the British Forces advanced. officers of the Dockyards undertook the fitting out of the immense Fleet of Transports and Hospital Ships which became necessary, and when requirements out-stripped their material working capacity, they provided the plans for and supervised the construction of the fittings by private firms and Railways, who were called upon to supplement the Government supply. It is obvious, therefore, that the possession of a Maritime Force containing a number of trained Transport officers was of great value to the Indian Government when War broke out and a direct benefit also to the The Dockyards proved of inestimable value to Goverument, and made possible immense saving in the fitting out of ships. The question may be asked "but could not Government have found men to take up this work in the time of war without maintaining an expensive service in time of peace"?. The answer is, that the Marine Service was fully employed in time of peace, and when war broke out, it would have been an impossibility to find the large number of trained and expert officers required for Transport and other war work, without either calling upon the Navy for assistance or loss of time in the training of Volunteers. As it was, the demand for a large River Flotilla in Mesopotamia made it necessary for the service to enlist a large number of temporary officers and Warrant officers to man them. These were obtained with difficulty in India and England. Considerable time elapsed before they could be enlisted and sent out, and, in a number of cases, the

experiment was unsatisfactory and the officers had to be sent home again.

I think the verdict must be that the existence of a Service of trained Sea officers and men was of immense benefit to Government when confronted with a great war.

The advantages accruing to the Indian and Home Governments in the possession of a trained Maritime Service in time of War are, I think, sufficiently demonstrated by the foregoing. The necessity or advantage may be questioned of having one in times of peace. It is beyond question that the requirements of a Government, possessing an immense Coast Line, must embrace certain organisations of a Nautical nature. Government must control Tidal waters, large rivers and even the seas adjoining their territories. Their large ports must be buoyed, lighted and surveyed in order to keep them open for Commercial purposes. Their seas must be charted and surveyed. The various Acts which control shipping and seamen must be administered by men who are conversant with shipping and Nautical matters generally. Such are generally the duties of a Civil nature for which Government must either possess their own organisation or else pay for the use of one otherwise maintained. In the case of India, if her own Surveyors were not maintained, they would have to be procured from the Navy. If the Imperial Government did not provide a Service to provision, store and relieve the Light Houses and Light Ships maintained, each Local Government would have to provide its own ships and men to do it.

For Military Services, the chief of which is the carriage of troops, it has often been urged that this work can be more cheaply and quite as efficiently carried out by private shipping. It is true that small reliefs can be carried by specially selected vessels, properly fitted for the work, but certainly no increase of efficiency would be gained. It cannot, for a moment, be supposed that a vessel built especially for the carriage of troops, and fitted with modern life-saving appli-

ances and specially trained officers and crews, will not carry men more comfortably and safely than a vessel hastily altered for the purpose. When the emergency comes the value of properly fitted ships ready for immediate service is apparent, and, in cases of urgent need, the readiness of such vessels may be decisive. There is, too, the necessity of providing Despatch vessels for Political Officers, a necessity not easily or suitably met except by a Government Service. The Government of India maintained 5 of such vessels when war broke out—no private ships could undertake this work, and indeed the prestige of Government required that their officers should be properly provided with suitable Craft for the visiting of their charge and returning the visits of chiefs in their zone of activity.

I think it will be admitted that there is, therefore, a case for the maintenance of a Maritime Service by the Government of India, both to satisfy unavoidable requirements in time of peace and as a preparation for war. The question to be considered is whether the present R.I.M. is the best type of service to meet the needs of India and what the future scope and duties of the service should be. The Indian Government's method of selection is a very good one. Primarily, they endeavour to attract the sons of old servants of Government, and most of the officers at present in the service are the sons of Military men. They serve 4 years, either on a training ship or in the Mercantile Marine, and having obtained the Board of Trade's Certificate as 2nd Mate, are then up to the age of 21, eligible for appointments, subject to passing a medical examination.

There was no dearth of applicants up to a few years before the war but times were changing. On all sides wages were rising and the cost of living becoming higher. The Mercantile Marine had improved its status prior to the war enormously, by agitation and by co-operation. Wages were increased all round and conditions of life at sea improved. The R.I.M. service, however, did not keep pace

with these improvements, and increasing difficulty in finding recruits was being experienced, before the out-break of war. That the type of officer obtained in the past was good is shown by the extraordinary record of the service since the war broke out. The strength of the service in 1914 was 105 Executive officers and 85 Engineer officers. Up to the present date, 1918, 3 C. M. Gs., 6 C.I.Es., 9 D.S.Os. and 9 D.S.Cs. have been awarded as well as several promotions. The type of officer recruited and trained in the Marine must therefore be of a high character, and it may be agreed that no change in the method of recruiting is required.

As regards the duties of the service, it will be conceded that what it was doing before the war and doing well will be carried on by it when peace returns.

In certain matters, however, it seems desirable, for the good of India, that an extension of these duties should take place. Take, for example, the lighting of the Coasts; it would be of great benefit to the Shipping Community if, instead of leaving the lighting of coasts to Local Governments, the whole management was placed under the control of a central organisation. Burma and Madras have tackled the problem carefully, and the result is that their Coasts are the best lighted in India. Bombay and Sind, however, are far behind the times, and the best Lights on their Coasts are due to the energy of the Port Trusts administering the large Ports of Bombay and Karachi. The R. I. M. have already the lighting administration of the Persian Gulf on their hands, and they maintain also the Light-house Steam Tender in Burma. The whole lighting administration of the Indian Coasts might well be handed over to them.

From an Imperial point of view, also, it is questionable whether it is sound policy to lock up a large number of Naval officers and men in a number of weak vessels on the E.I. Station. The Naval authorities have shown the tendency of their policy by relinquishing entirely the old Naval Trooping Service and handing over the surveying of Indian

Coasts to Indian officers. I suggest a further development designed to relieve the Navy of duties which are in the nature of Police work. There is no reason why the R.I.M. should not undertake the Police work of the Indian Seas including the Persian Gulf. For this purpose a small number of lightly armed despatch vessels are all that would be required. Their powers of offence would be limited to an occasional use of a 3 Pounder Gun. Indian crews are quite equal to this, and highly trained white crews would be released from duties in a climate which takes unceasing toll from them. These despatch vessels in war time would naturally be available for use as Examination vessels and for Coast Patrol work.

The duties of such a re-organised Indian Marine might then be summarised as follows:-

- 1. Transport of troops and training of Marine Transport officers.
- 2. Coasts and Lights administration, including the upkeep of all Light-house Tenders.
- 3. Provision of suitable trained Officers and Engineers for service as Port Officers and Engineer Surveyors at Indian Ports.
- 4. Survey and Charting of Indian Coasts and Harbours.
- 5. Policing of the Indian Seas.
- 6. Maintenance of Government Dockyards for the repair of the Indian Flotilla and the building of all craft required for Local Government administration, and also for the fitting out of Transports.

An all round increase in the pay and certain improvements in the conditions of service in the R. I. M. have just been sanctioned by the Secretary of State. They constitute a considerable improvement in the pay of Officers of Gazetted branches, but these concessions are based on proposals formulated 3 years ago and in most cases they represented the first increase of pay for the rank concerned in 30 years. If the former popularity of the Indian Government Maritime Service is to be completely

revived it must keep pace with modern ideas and offer advantages at least comparable with those of the Mercantile Marine. The grant of the King's Commission is an absolute sine qua non. When it is realised that officers are liable to undergo the same risks and suffer practically the same penalties as their brother officers in the R.N., R.N.R., and R.N.V.R., it is difficult to understand why they should be denied the honour enjoyed by them, more especially in the case of the two latter services to which the R.I.M. is senior.

The Royal Indian Marine Service is administered at the Head Quarters of Government by the Army and Marine Department, which is presided over by the Commander-in-Chief in his capacity as Army Member. In this respect its position is analogous to that of the Postal and Telegraph or the Indian Police Service, which are administratively dependent on the Commerce and Industry Department and the Home Department respectively. It is open to doubt whether this is a satisfactory method of administration from the Seamen's point of view, but it is a question which will presumably be gone into after the war.

Regarding, as an accepted fact, India's need for a Marine Service, and that its administrative and executive personnel must comprise men familiar with Indian conditions and with the language and customs and people of the country, it must be acknowledged that no better basis upon which to establish a service worthy of the India of the future could be chosen than the present ROYAL INDIAN MARINE.

# TRÁNSPÓRTATIÓN. A LESSON OF THE PRESENT WAR.

BY

### CAPTAIN A. V. GOMPERTZ M. C. R. E.

The whole question of the systematising, consolidation, and centralised control, of all the various means of Transportation, as a strategical and tactical asset in war is so new that it is as yet impossible to make more than comments upon it.

Minor rules may be laid down with the probability of success; major ones cannot.

In this short article the writer desires to give comments, and to enunciate such minor precepts as can be taken with some degree of safety to have been formulated and proven even now. The whole is based upon seven months experience of concentrated fighting of large forces on a small front in the latter half of 1916; but it is confidently reasoned that principles at any rate cannot have changed, even if they may have considerably developed, since then.

The general idea is to give the why and the wherefore of certain things which happened then and must of necessity be still happening very similarly now; and the special idea is to Engender thought rather than to Dictate it.

Facts can be given, and certain indications also. Reasonings have been attempted up to a certain degree: the facts remain, the reasonings give, it is hoped, indications; and it is the hope of the writer that where his own reasonings may often fail, his facts and his indications will still serve to others as a means of arriving in much clearer ways to the correct reasonings and results.

# Transportation. A lesson of the present War.

Only in one major characteristic does the present wat differ radically from all its predecessors in the history of the world; and that one, which is specially in evidence on the western front, consists of the hugeness of the armies employed.

It is true that the years since 1914 have witnessed some startling additions to the category of tactical weapons: the universal and efficient mastery of the air was unknown and undreamed of even in the last great war of only thirteen years ago; and the employment of poison gas was only introduced when the present struggle was already many months old.

Yet neither of these novelties, however great their importance or far-reaching their effects may ultimately become, can be said to have constituted the pre-eminent new feature of the war. They consist of completely new weapons; but the introduction of such is a perpetual feature of the progress of warfare. Aeroplanes and poisongas are no greater innovation to the fighting of today than were the first military use of gunpowder or the Horse of Troy in older, other, days.

It is the vast Increase of Numbers of the combatants that differentiates the present war most notably from any other known one: never before have armies, several millions strong, been at hand-grips in the field. And it is in the direct and the indirect results of this Increase of Numbers that we must look for the newest lessons of the war.

Other new features there are in plenty nowadays: such are the Air Forces, the masses of Motor Transport, the vast concentrations of heavy and light artillery, and the plethora of minor new tactical weapons such as gas and gas-shells, the Stokes Mortar, and the Lewis gun. Of these lesser novelties, however, only one appears to be worth considering as an initial constituent of new conditions, in the same class as, but far less important than, the Increase of Numbers. That one is, the Employment of Air Forces.

These two things, namely the Increase of Numbers and, in a much lesser degree, the Employment of Air Forces, stand out as the two primary factors of all the more important new aspects of the western warfare; and it is worthy of note that upon analysis their influences, through one channel at least, tend towards an identical result, which is the supreme importance of Transportation.

It is only proposed in this short thesis to examine the results of those primary factors in that one direction. Others

they possess in plenty and of vital gravity. To take only one as an instance: the complete lack on our part of any systematic pre-war training in what the French call the "Commandement des Grandes Unites" has had, and is having, results in this war that are calculated to set the head of every soldier thinking.

This article however must be confined to a brief analysis of some of the lessons gained in Transportation.

Consider first the effects of the Increase of Numbers. It is of course obvious at first sight that a large increase in numbers of forces must produce at least a corresponding increase in the need for transportation.

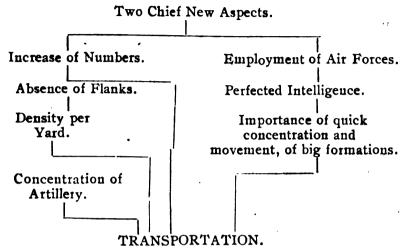
What it is intended to consider here is the special way in which this is brought about; and, furthermore, the fact that owing to certain other new conditions in modern war, the question of Transportation has assigned to itself an increase of importance and difficulty, out of proportion even to the increase of personnel served.

It will be seen that not only does the Increase of Numbers bear upon Transportation directly; but indirectly too, for other of its consequences also have their own individual direct bearing upon that service. Furthermore the Employment of Air Forces has, indirectly, its own very great bearing upon the question.

All of which tends to shew more obviously the great necessity for clear forethought and active and efficient organisation in a service which effects Military operations in so many ways as Transportation.

In order to prevent my subject from becoming involved, the effects on transportation of the productive influences named, (Increase of Numbers, and Employment of Air Forces), can perhaps be made more clear by a diagram, prior to analysis. This I give below.

## Present War in Europe.



The above diagram should make it clear how some of the principle demands of western warfare not only sit directly, but also combine with each other to sit, both directly and indirectly, upon the willing Pack-mule of Transportation.

Let us consider now the effects of the Increase of Numbers, in detail.

In warfare as a whole, the present huge growth of the size of militant armies is of such very recent occurrence that it is early yet to examine its results with much success. Certain of them have however undoubtedly materialised in the west; and two may be selected as being at least the most noticeable and easily perceived.

## These two are:-

- (i) The Absence of Strategical Flanks; with all the attendant consequences.
- (ii) The direct development of Transportation and of its importance; which is the main theme under discussion.

Take first (i), the Absence of Strategical Flanks. Nowadays this is, at present at least, a positive fact; sustained, by the iron vigilance of the Allied Navy and the perpetual presence of the German fleet, into a kind of deadlock.

This first effect of the Increase of Numbers is of the greatest interest inasmuch as, prior to this war it can scarcely be said to have been contemplated in any Military School of thought to any thing of the extent to which it has actually occurred.

The conflict of big armies was well foreseen, best of course by the Continental Nations who already were wise enough to possess them; but the contingency of their being as large as to have no flanks but a Neutral Country and a far-distant and a practically unusable sea does not seem to have been analysed in any detail.

It is only by quick and daily-changing modifications of the old art of Fortress warfare that the new contingency has been met; the recurring, if brief, intervals of open tactical action being of course conducted on the old lines.

The Germans, who planned and forced into being the present war, are often imputed to have been completely prepared for its present phase of trench warfare which is another ultimate result of the Increase of numbers. These accusations are often founded upon the superiority and undoubted pre-war construction of many of their trench devices.

It is, however, far more than probable that those devices were primarily and solely intended for the reduction of French and Belgian Frontier Forts; and were only fortuitously and most advantageously employed in treuch warfare as the latter became paramount.

In all probability the continued absence of Strategical Flanks has been in general as unforeseen to our opponents as to ourselves; for undoubtedly they placed the greatest faith in their strategical rushes of early days. All the more therefore is it worthy of analysis.

From the absence of Strategical Flanks accrues one result from which come nearly all of its lesser ones in due course. That primary one is the great density of Troops per yard of Front.

Had the battle ground on the western front been actually unlimited, the present war might have differed in little save tactical

weapons from all its predecessors. The Strategy and Grand Tactics of the Soudan and South Africa might have been repeated on a larger scale; with Armies in place of Brigades and Army Corps in lieu of Battalions. There would then also undoubtedly have been occasional episodes of siege warfare, comparable to Port Arthur, in the case of Frontier Forts and other large defended towns and areas.

As it is, however, the absence of strategical flanks has enforced upon the opposing armies the necessity of remaining comparatively stationary for the greater part of the year, and, in consequence, a density of troops per yard of front hitherto unknown.

At the moment of attack the density of the actual attackers in the front trench may not differ greatly from the pre-war standard of a final trench assault; but with them must be included not only their immediate supports, but all their local and general reserves too, and all the supporting and administrative troops who are far forward enough to have a direct share in the battle.

In an active, moving battle line in the west, consider the case of a Division in the Attack. It will have a frontage of about 1,200 yards only. Behind it will certainly be a Division in support; and behind that again at least one Division per Two-Divisional Front in reserve, but well within reach of the battle.

Again actually concerned in the fighting, that is to say within about five miles of the fluctuating front line, will be large numbers of other units not allotted to Divisions: great strengths of Corps Heavy Artillery, Labour units, Administrative services.

The strength of troops per yard within the battle area will thus be over  $2\frac{1}{2}$  Divisions per One Divisional Front of Attack: say at least 55,000 men per 1,200 yards, or 45 men per yard of front on a five mile depth.

This enormous density, which may even be exceeded for short periods, is something entirely new in war; and the strains brought upon Transportation by the feeding, munitioning, evacuating, and replacing, of that density must be seen to be · realised.

From this density arises very directly another innovation, namely the present use of vast masses of heavy and light artillery in the field.

Before considering in detail the direct strain on Transportation caused by density of troops, the question of Artillery may be briefly examined, as affecting Transportation only by the actual extra volume of personnel and material to be conveyed.

Here the innovation consists rather in the protracted use of large and heavy-calibred concentrations than in the actual concentrations themselves.

The Crimea, the Siege of Paris, the Investment of Port A:thur, all saw large concentrations of heavy artillery for a short time, for the actual duration of siege operations.

This war has not only seen far greater concentrations of artillery than ever before, but has witnessed their continual employment for years on end.

Without a very great density of troops holding the line this could never have been the case: the risk of local assault and destruction of valuable artillery would have been too great.

In this way, the degree of entrenchment possible by consequence of the absence of flanks has necessitated the uses of enormous masses of artillery to overcome it: whilst, at the same time, the large number of infantry present in the defences, again consequent upon the absence of flanks, has rendered the employment of so much artillery possible. The supporting Heavy Artillery of today could not safely carry on if it had anything much less than its present infantry in front of it: for its mobility is comparatively small, and its vulnerability at close quarters is extreme.

So much for cause and effect: the first effect of Density of troops in the line may be taken as the fact that Heavy Artillery is able to keep continuously concentrated in support. Not only Heavy artillery moreover, but extra masses of light guns too, borrowed from temporarily unoccupied Divisions, supernumerary, and so on, all helping in the work so long as they are safe and

not overcrowded.

The increase in personnel in the battle area due to all these extra guns may well be imagined: the huge increase of material to be carried due to their vast expenditure of ammunition is so big as not to be easily imaginable until actually experienced. The corresponding demand made direct upon the service of Transportation is obvious.

To look for a moment upon a side-issue and into the future: how far this increase both in the strength and in the calibre of heavy artillery will affect future wars is not easy to forecast yet.

What is certain is this. That as time goes on, the everimproving mobility of heavy guns will continue so to improve; and thus, in the first great strategical sweep which will probably characterise the opening of at least every European campaign, the value of land fortifications will be greatly discounted. This however is a diversion.

To return to the main subject: having disposed of Artillery the question of D rect Strain on Transportation due to density of Troops per yard of Front will now be gone into in some details.

This question cal's nowadays for especial consideration, if only for three reasons selected from many.

1. The problem has assumed a really vast importance so comparatively suddenly.

Firstly, in this modern watfare of huge armies and immense concentrations of troops, i:e; of great density of military line, we have the utter inability of those armies to derive even an appreciable fraction of their sustenance from the actual theatres of war.

To the British Nation especially, accustomed to wars in distant future colonies and in sterile frontier districts, it is no novelty to have long lines of communications and to feed small or big forces from a distance.

But to us and to all the other belligerent nations alike, it is a complete novelty to have to feed such vast forces as are in the field to-day with food that comes largely from thousands of miles away. It is, moreover, just as complete a novelty to have to feed such dense masses of troops in each sector of the battle-front as we do through each constricted artery of supply.

2. Next, after Food, comes the Transportation of Munitions.

Increased armies mean more than a proportionate increase of armament, as we have seen; and the daily volume of shellfire on an active portion of the western front is something hitherto undreamed of.

Here again all the belligerents are faced with the conveyance of enormous quantities of munitions and ordnance to the front through strictly limited arteries of traffic; to say nothing of the returning of empties and of damaged and expended pieces.

3. Thirdly, after supplies and munitions, comes the question of the movements of Personnel.

Under this head come strategical moves, tactical moves, evacuation, replacement, and, in a very minor degree, what may be called economic transfers.

The first four of these (for the fifth is of little importance and is mostly a matter of individuals) take place throughout the front on an unparallelled scale of density: the density growing far the greater as the actual battle-front is neared.

The above three aspects may serve to indicate some of the direct demands upon Transportation in a modern western battle, and their magnitude; and they constitute a first good evidence of the importance of the whole question.

A second good evidence is this:—that the degree to which the problem of Transportation has been solved quickly and efficiently by the Combatant Powers in the present war has been to a great extent the measure of their success or failure in their larger operations.

Instances of this could be given almost without number.

To select three at random:—It was the "Taxicab Army"

that sealed the fate of the German right and bore such fruit against the first rush for Paris in 1914: it was Germany's scientific and unerring use of strategic railways that weighed so heavily in her offensive against Russia in 1915: a German Colonel captured on the Somme in 1916 said whilst marching back towards Fricourt, "Ah! When the rains come it will be your roads that will cook your goose for you, just as ours cooked ours at Verdun". Besides its direct gauging of the success of big operations, there is a third fact, which gives Transportation a special importance in our own case.

That is, that our own recognition of the growth of the question to redoubtable dimensions is of such recent occurrence that only after two years of war did we recognise that it required expert handling.

Only at the end of 1916 did we ensure the complete coordination of all the vast means of transportation and the successful meeting of the huge and varied demands upon them, by the creation of a Directorate of Transportation with its own technical staff and department.

It is extremely evident therefore that we must of necessity still have a great deal to learn regarding the smooth and efficient solution of the problems before that Directorate under present conditions

No more need be said about the Importance or the question of Transportation, as established directly and indirectly by the effects of the Increase of Numbers. Before considering any steps to be taken to solve its problems, a few words may be said as to how the Second great New Factor in western warfare bears upon Transportation: i:e: the Employment of Air Forces.

It is not an easy matter to define exactly the real sphere of influence of aircraft in warfare. A tactical weapon they obviously are.

Yet, inasmuch as they are capable under certain circumstances of obtaining immediate and accurate intelligence of hostile dispositions even at great distances, they may with some truth be classed as a strategical weapon also.

They can however have no more influence on the unchanging principles of strategy than any other new weapon; and it is in Tactics and in Grand Tactics that we must look for the results of their introduction.

In tactics they have produced appreciable alteration to the extent of camouflage and of greater material protection. Camouflage, which term may be liberally extended to include the far greater use of night for all movements and reliefs, is the direct result of aircraft and aerially controlled artillery; the increase of material protection necessary to the troops is partly due to the same cause.

These changes however cannot be discussed without entering into the details of tactical operations; and they have no greater interest than any previous or future introduction of a new tactical weapon.

In what may be called the Grand Tactics of the present western watfare, that is in the conduct of a large offensive or defensive on the present stationary front, the use of the Air Forces has wrought a considerable change from what would have occurred without them.

This has been done by the greatness of extent and reliability of the military intelligence which aeroplanes and, in a lesser degree, balloons, obtain. Every major movement of troops is almost at once known to their opponents; every new road, railway, canal, or big store and ammunition dump which might presage active operations is seen from the air, photographed, and pigeonholed by the opposing Intelligence Department.

Camouflage can do much but the greater the camouflage the bilder the investigation; and there seems to be no limit to the daring, and but little limit to the success, of the modern Allied pilots and observers.

The present phase seems to be one where little of either local or general importance remains for long unknown to an opposing side.

To illustrate by details: during the course of important.

actions as far back as two years ago, large-scale maps of all the enemy trenches were circulated afresh every twenty-four hours, with all new enemy work as well as all our own new gains specially coloured.

With knowledge of such a degree then, it becomes next to impossible to conduct large preparations in secrecy or to launch a large offensive unexpectedly. The knowledge will leak out: all that remains is to prevent it leaking out until as late as you can; and to be able to make your final movements and transportations so quickly that the enemy (who may know perfectly well where they are coming) cannot make his countermoves in time to meet them effectually.

With all the exceedingly intricate machinery of a modern Western Army, its huge personnel, its multifarious news and old tactical weapons of offence and defence, great movements must of necessity take great preparations, and so be the easier for the enemy aircraft to observe and to report upon.

It is therefore by the Pace of efficient preparations alone (other things being normal if not equal) that the greater successes are to be obtained; and the concentrations and dispersals and transfers of men and materials must be able to be effected with the greatest poss ble speed and the least avoidable confusion.

Mobility behind the line therefore becomes a First Essential to success: in the development of the battle Mobility through the pierced line becomes a vital adjunct; and these two things mean no only, which is Thoroughly Efficient Transportation.

It will thus be seen that the two primary new factors of the western war, namely Increase of Numbers and Use of Air Forces, both tend absolutely in common towards one great necessity; and that is the creation and co-ordination of as nearly as possible a flawless service of Transportation.

It is beyond the scope of this article to describe how this goal is being aimed at, or what steps are being taken to ensure both efficiency and co-operation between all the various classes of transportation devices.

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What may be done, however, is to make, from the light of experience, some few comments on the controlling of the three more common means of transport; namely Railways, Canals, and Roads, under the conditions of the present western battle-front.

The question of Sea Transport may be omitted from here as not being an integral feature of land warfare; and that of transportation by air also as being at present inconsiderable in magnitude.

It is therefore proposed to treat shortly of Railways, Canals and Roads, seriatim.

## A. Railways.

In the matter of railways the Allies have been faced, from the first days of really considerable increase of forces, with a comparative shortage both of stock and of permanent way material.

The actual situation of the present semi-rigid line of opposition of forces could not possibly have been foreseen before the war: obviously therefore nothing more definite than the grand strategical lines leading in the directions of France, Belgium and Germany were to be expected in peacetime.

How far new tactical lines were contemplated as a part of war preparation it is impossible to say without reference to unpublished Continental records; nor can one say how far the vast quantities of stores to be transported were foreseen.

The lesson however remains:-that a War Reserve both of rolling stock and of Permanent way material is vitally necessary as a peacetime asset. This matter can never again be left either to chance or to the laborious pulling up of less-used but still desirable lines in other districts.

Another point requiring consideration is the Density of Military Railway traffic in the forward area. This again must be seen to be realised; but perhaps it is really less of a complete innovation than some other aspects. Peacetime had its bankholiday and suchlike sushes: the big distributing centres and transhipping places had their crowded and seemingly chaotic

goods yards.

Only the steady continuance and universality of the strain is new: railway measures already existed, that were capable of meeting it.

Here again the existence of a reserve of permanent way material would undoubtedly lessen evils, and would have done so in some cases earlier in this war. The quick doubling of single sections is the only preventitive of laborious shuttle-work and mile-long strings of trains at bottle-necks.

One more point needs touching upon in the matter of railways.

It can in truth be said that the key to good Roads consists in Good Railways whenever (and that is very often) road material at site is scarce. It may further be added in respect of forward battle areas, that the key to good roads is plentiful light railways.

In any war with a period of stationary and densely held front, the congestion of traffic close to that front must be very great; and, if everything has to go by road, neither will the existing roads suffice in number for the volume of traffic, nor their surface for the weight of it.

Light railways are the only preventitive for this undesirable state of affairs; and some of the belligerents in this war have been caught markedly short of them.

The results have been immediate and heavy. Over-congestion of road traffic, undue deterioration of road surfaces, blocks and worse congestion resulting, then non-arrival of munitions and supplies, also greater casualties from enemy fire in the congested roads, and a whole tale of major and minor evils ensuing.

As regards the Germans themselves, the colonel before-quoted admitted himself the secondary cases of all these evils in the particular case of Verdun:namely the failure of the roads.

Moreover, as well as relating to roads, this question of light railways bears directly and indirectly on that of Motor Transport.

It will be readily conceded that the most efficient economic use of Motor Transport consists of long non-stop runs to supplement (and, where necessary, to replace) the use of normal gauge railways; and not of continual short runs in congested forward areas with perpetual start-and-stop-and-start work over roads which are often already bad enough to increase by hundreds per cent both the repairs and petrol-consumption bills of the vehicles.

The point where Motor Transport ceases to be economically employable is undoubtedly the point at which a fully developed system of light railways should commence; and that is, in effect, the first point at which traffic in the forward area becomes seriously congested.

Moreover in a modern battle area it will be nearly always found to be in approximate coincidence with the foremost point to which normal-gauge railways can safely proceed.

It may be firmly laid down then, that if there is any future chance of a recurrence of even a modified form of the present fortress warfare, a large reserve of light railway stock and line must be held by a responsible department in the nation concerned.

This provision for light railways must moreover compass the provision of a good deal more than rails and trucks: there must be no half measures.

Sufficient steam-locomotives will be required to work on beats not over-exposed to enemy shellfire by observation; and petrol or oil engines will be wanted for the further forward runs. Both these were worked and found most efficacious in forward areas (notably French ones) in 1916, to speak from actual memory.

Finally there must be a reserve of repair and construction plant and stock, and of trained driving-maintenance-, and construction-, hands and staff.

No more need be said of railways: there is indeed a lot more to be said, involving technical details of construction and administration which are best left to technical experts.

#### B. CANALS.

In the matter of canals not much comes within the scope of a short article. Expert organisations existed in peacetime for the working of these; and the only needs in wartime were their adaptation to military usages, and occasionally the reduction rather than the intensification of their traffic. Many of the French and Belgian canals are carrying much less now than they did in prosperous time of peace.

Their adaptation to war has been carried out with perfect success, mainly by their peacetime staff.

What may well be said here, is a word or two in the case of our own particular nation. There the enormous production of iron and the consequent plethora of railways have relegated the majority of our canals to disuse, and some to entire destruction.

The possibility of a war on English soil can never be completely absent; and it would pay us well to take careful note of what is done on the western front, and to mark the very great value indeed of water transport both for the service of stores, and, for its minor feature, the evacuation of wounded.

Not only can that service deal satisfactorily with the moving of very large quantities of stores indeed, but, what is far more important, it can thus greatly free the railways for the quicker transport of personnel and of urgent material which is such an essential feature of strategy and of grand tactics as has been seen.

That is a matter of vital gravity. We have many and well-made canals at home; and we would do very well to consider both the strategical and the grand tactical value of them all, including those in temporary disuse or disrepair, and take early steps for the resuscitation of the latter.

The cost in practically every case would be but an exiguous item in the future Insurance Bill of the Nation against unsuccessful wars.

I now pass to the subject of Roads, as the third subhead of Transportation.

### C. ROADS.

In the matter of roads we, and probably every one of the other belligerent nations too, have learnt, sometimes at bitter cost of time and trouble, much that was new to us; and it may be of some advantage to analyse the matter in some detail.

Three things perhaps stand out before all others wherein pre-war knowledge was necessarily wanting; and in which the experiences and lessons of the present war must be carefully stored up for future reference.

These, which may be treated seriatim, are

- (i) Motor Transport.
- (15) Road Maintenance.
- (iii) Traffic Control.
- (i) Motor Transport.

The extended use of Motor Transport is an innovation peculiar to this war.

Its primary effect on roads is to demand a far greater efficiency of surface (and corresponding extra strength of bridges); it also affects directly both maintenance and traffic-control as will be seen later.

Regarding the surface, without going too deeply into technical details, it may be safely stated that the section of a road fit for heavy motor transport must be at least the double both in soling and in metal of even a road fit for really heavy military horse traffic.

This fact involves very heavy labour both in the construction of new M. T. roads; and also in the making of such accessories as M. T. Park sidings, M. T. railway sidings, and passing places.

The degree to which these works are nowadays necessary is not perhaps universally realised. Instances have been known of an Army Corps in the van of an attack having no motor transport road, nor any lesser road either, leading in the direction of the enemy, within the limits of its lateral boundaries.

Such a circumstance meant borrowing the use of, and so congesting, other Corps' roads; and, in the meantime, constructing a new M. T. road at record speed, and taking a large quantity of the material for it through the already congested traffic on other roads.

The accessories mentioned above such as sidings etc, have almost always to be of entirely new construction, to say nothing

of new M. T. roads. All this new work involves still more personnel and material in front, thus adding considerably to the very problem of transportation which it is trying to solve.

So much for some of the primary effects of Motor Transpor.

(ii) ROAD MAINTENANCE.

Here again, without quoting a wealth of technical detail, it may be said that the degree of maintenance necessary to forward roads, largely due of course to Motor Transport and especially noticeable in wet weather, is a thing unknown ever before the war.

With thousands of tons of heavy lorry traffic daily, the life of a 12" soling and 6" metal road is sometimes a matter of a very few weeks. Patching, apart from that due to shellfire, is continuous: large maintenance gangs have to be perpetually at work draining, sweeping, cobbling damaged bits, distributing repair metal.

Here again are involved numerous personnel and a corresponding quantity of material.

Consider the state of affairs for the first eight-mile depth of an Army Corps front about two miles in breadth, excluding the actual mile or so nearest to the enemy which is administered Divisionally, on an active tattle front.

The autumn road personnel, including those for the unloading, transhipping if necessary, and transport of road material, will not be less than 4000, and that number may increase periodically by one or two thousand for any specially urgent piece of work. The consumption of road metal will be measured by hundreds of tons per day.

The tax on Transportation and also upon organisation can well be imagined.

Moreover the difficulties of satisfactory repair are colossal. Military traffic close to the western front is exceedingly thick: roads do not exist in anything like a desirable quantity along most of the line; and in consequence they can practically never be entirely closed for repairs except occasionally for a very few hours of the twentyfour.

Every scrap of road material has to find its way through the thick traffic: three quarters of the road repairs must be carried out actually during the progress of the traffic; and consequently a very vicious circle has to be contended with.

This is as follows:—damaged roads mean lorries stuck and ensuing traffic blocks: traffic blocks mean less repair material through; less repair material getting through means worse roads. In some unavoidable cases of important roads the evil is so great that consolidation has to be foregone altogether; and in such cases the road surface is made of metal which will pass a 5" gauge but not a 4". This is dumped out over the tailboards of moving lorries and spread at site by the labour units; and works very well, being too big to be picked up and so displaced by moving traffic.

In other cases the vicious circle can be, and is, contended with by thorough and rigid organisation and the hardest of work. To discuss and shew how would lead into too much technical detail: let it suffice to shew the presence and the great importance of the difficulty, which is one that will have to be faced in every single campaign where Motor Transport is used upon anything but a most prolific system of roads.

In this question of Motor Transport, roads in the areas further removed from the battle line do not present the same difficulty. The traffic on them is never so heavy: they are often much nearer to the available sources of road metal and soling; and they seldom if ever require either new work or repairs at such high speed as the forward roads.

They can moreover often be coped with to an appreciable extent by gaugs from the population normally resident in their locality; in which case they throw no added strain on Transportation whatsoever, except for an increase on pre-war rates of supply of repair material.

## (iii) TRAFFIC CONTROL.

This again is much of a novelty to a battle front. If absolute disaster is to be prevented, with the extraordinary density of traffic in the forward area during a battle, traffic control must be

more than extremely severe: it must be absolute.

By disaster I do not mean any great or small accidents; but the blocking of roads and the consequent late or non-arrival of men and munitions. And it is no easy matter to avoid it when the density of traffic is such that a temporary traffic block can produce what I myself have seen; which was a solid mass of lorries, cars, horse, foot and guns two miles long within almost light artillery range of the line.

To meet the difficulty, the first step is to divide traffic into classes, and nominate clearly defined circuits which each class must follow.

For the lighter classes circuits are not generally necessary save right up in the most forward area: for the more cumbersome classes they are essential everywhere.

The usual classification is as follows:—

- 1. Motor Lorries (3-ton, 30 cwt, and 1-ton) DOUBLE TRACK.
- 2. ,, ,, SINGLE TRACK.
- 3. Motor Ambulances, single track.
- 4. Horse and mule wheeled traffic.
- N. B. Staff cars are unrestricted save in exceptional cases e. g. of roads under serious repair; and the same privilege is given to a great extent to Flying Corps tenders and to 15-cwt lorries ("Box-cars").

After the Division of roads as above; special traffic maps are issued to all concerned with the circuits clearly marked: they usually consist of skeleton maps with the roads coloured and marked with coloured arrows, and, on the roads themselves, boards with arrows are erected as a help to the map.

Motor lorries are of course the greatest trouble of all: one badly bogged may affect a whole division's supplies; they are kept most rigidly to the circuits allotted to them. Only Road repair Lorries are allowed "against the arrows" on most occasions by collaboration of the R. E. and P. M's departments; and that privilege is usually foregone when a road is being systematically repaired half (in width) at a time as is often necessary.

Motor Ambulances are often allowed, in order to facilitate quick evacuation, to use the horse traffic roads in stated directions only.

The Traffic circuits are rigidly enforced by a sufficient and experienced staff working under the Provost-Marshal's department; and for obvious reasons the severest penalties are unsparingly dealt out to anyone disobeying them.

Finally, since horse traffic is so much slower than all kinds of motor traffic and can go over much rougher roads without harm, it is kept off the motor roads to the greatest extent possible.

Fair-weather tracks are cut alongside, close and parallel to all the motor roads, and indeed to all roads where motors can go, as far as practicable, beginning with the large and important ones; and all horse and mule wheeled traffic is rigidly diverted into them on every fair or wet day when their condition is good enough for wheeled traffic to use them without getting bogged.

Special cross-country tracks are also cut for cavalry when there is a chance of their operating in the tactical area: and the same is (or at least always used to be) done for Tanks and for Caterpillars, which rip the bottom out of any ordinary road in a very short time.

Such are a few features of Road Traffic on the western front, all a subhead of Transportation. If they have been gone into at some length and in some detail, it is because they are not only very new to warfare as a whole; but also because, Motor Transport having come to stay, they are bound to affect every future campaign in a greater or lesser degree according to circumstances.

As a final remark anent roads, it may be confidently asserted that "The Key to Roads is Railways". In legislating for forward roads, the cardinal rule is not actually to do with roads: it is to develope the Forward Railways. The rest will follow.

The ordinary gauge railheads must be as far up as possible; and, as has been pointed out, forward of that again, the

work of Motor Transport (and the consequent very heavy wear and tear of forward roads) must be minimised to the utmost possible degree by the institution of as complete as possible a system of light railways.

## Concluding Remarks.

In the earlier days of the war, with smaller forces actually in the field, railways, roads and canals were very largely worked by their own peacetime departments, to a great extent independently too, though under the requisitions of the Military commanders.

Only the later huge increases in men and in material brought out clearly the need for the closest co-operation between the various "Carrying" agencies, and at the same time shewed the necessity for their fusion into one great system, entirely under Military control and responsible to one responsible chief.

Whether such a war, and a war under such conditions as the present one, can ever occur again within a reasonable period, is not a matter for conjecture here. It is however obvious that neither the financial cost of operations nor the absurd theory of "A war against war" will ever put an end to wholesale fighting so long as there is anything left in the world worth either coveting or defending; and that is likely to be a long time.

An almost flankless war of immense forces between East and West may be improbable; but it cannot be called impossible, in the eventual future.

Within Europe itself, if that very inviolability of Neutrals for which the Allies are now fighting desperately is finally guaranteed by this war, land combats between neighbouring powers must again take place on restricted frontages, and must so again present that same disproportion between troops and length of battle-front that we have now. So also will that density reoccur which makes Transportation such a vital problem.

Even in minor and Colonial wars, armies and armaments are hardly likely to be reduced to pre-war proportions: material and supply of tactical weapons will certainly not diminish; and wherever Lines of Communication are in any waylimited or constricted in proportion to the troops they serve, the question of Transportation will at once become an acute one.

Transportation is only one aspect of the present war: the early shortcomings of many of the belligerents in that respect form only one of this war's lessons.

Yet in view of the vital importance of the question to modern operations, and the lateness with which that fact has been realised in more than one or two cases, one is able even at this inconclusive juncture of the campaign to assert in full confidence that this Lesson is one of the Major important ones that the war has to give.

Wherefore it is equally clear that the whole mass of the lesson must be carefully stored up; and given the closest consideration in the future before any active operations are undertaken.

### THE PUNJAB ZENANA IN WAR.

By John Travers.

Harnal is a small brown hamlet some 20 miles from Rawal-In May 1857 a Brahman rode from its heart across the wide plain to the cantonment where John Doran was raising the He offered his services and for many years was 27th Punjabis. Subadar Major of the regiment. As an old man he married a young wife and his widow lives in Harnal now, listening to the tales of the great war which penetrate the zenanas. For half a hundred years and more those zenanas have harkened to just such tales, drifting to them from Afghanistan, Burma, China, Somaliland and the Frontier, and many a life has been shattered by the news of casualties on the far flung fields of battle. The women's eyes have not seen, the women's ears have not heard, the great world of men at their combats and struggles, but their hearts have declared unto them the meaning of a soldier's sacrifice. When the enemy's sword strikes it does not only try the nerve of the Sword Arm of India—it strikes Home and wounds the Hindu woman beyond all healing. And because the women of Punjab soldiermen had been my friends for years, visiting me whenever they stayed in the married quarters of the regiment, and because they shared with me the fortunes of war, I paid Harnal a visit as the guest of a retired Indian Officer, who had been Subadar Major of my husband's regiment for as long as I could remember, in order that I might say to them in all sincerity "I know what it is like, I know it is worth all the suffering-let us share a few days of the anxiety and mourning together."

I made very few preparations for the visit. There was with me at Delhi as orderly a young Brahman of the 27th Punjabis who had been wounded in Mesopotamia; he went with me to Harnal, and so did a Mahomedan servant as cook. I had arranged to stay at a Rest House about a mile from the village, but a letter from the Subadar Major pressed me to reside in a Guest House on the outskirts of the village, built between a temple and a dharmsala, and owned by a retired Indian civilian of the village.

I afterwards discovered that the women had protested at the idea of my living over a mile away, "If she stays so far from us how shall we see her daily? Once only will she visit us, therefore she must be near to us and we shall hold her hand each day." I promptly agreed to the Subadar Major's suggestion and further stipulated that I should pay for everything during my visit, "I am coming according to the custom of the Army's Sahib-log" I wrote, and told him that I had no special interest in seeing any of the civil population but wanted to meet the wives and mothers of soldiers. On arrival I found that the old man had let it be known that I would gladly listen to any of the difficulties of soldiers' families provided that they had a claim to make and not a favour to ask. This was very strictly adhered to by the people; none of them petitioned for favours and not a soul would take an anna from me as a present, even where they were clearly in financial difficulties through the miscarriage of an allotment or a delay in the payment of a pension.

When I reached Mandra Junction and left the train the February air was crystal clear, vivid green patches of cultivation broke through the hard earth with the irresistibly strong impulse of Spring, and golden mustard fields minted an untold wealth of perfumed beauty. The Subadar Major was on the platform to greet me and with him was a fine old warrior back from the war, where he had fought on the Canal, in France, and in Mesopotamia -but best known to me as the Mess Havildar who provided soda water, tea, cakes, and chairs, with the magic of a good fairy at a christening whenever hockey required light refreshment to stimulate the interest of Memsahibs. Underneath all the hearty hospitality that their manner conveyed I could see the social palpitations of those who embark upon an enterprise of unknown magnitude. A camel awaited my luggage, and I quickly perceived that the question of how to transport me to Harnal (I had written that I would not ride) had been one of great perplexity. man with an enormous family had built a stout platform supported on carrying poles and, when its roof had been removed in order that my head might rise like a spire, I sat crossed legged

with considerable comfort and we set forth, the Subadar Major and Havildar Hira Singh riding by my side, the servant and orderly walking and the camel lurching along behind us. By the time we had gone a mile the social atmosphere knew no nerves, so quickly did the flood of reminiscences carry us back into the old days before the war, and overseas in the footsteps of the regiment. There was everything in the world to talk about, from the fate of the fallen and the rewards of the bahadurs to the ownership of the land around us and to the interesting news that the Afridi Subadar Major of the regiment had just grown a beard to the admiration of all right minded recruits at the depot.

Eyewash, like beauty, is but skin deep. It is possible that a Brahman village in the Punjab might have so cleaned its streets and houses as to deceive an Englishwoman, whose acquaintance with Indian villages went no further than a ride round their outskirts, an abhorence of their pi-dogs, and an avoidance of their rubbish heaps. But no hasty lick and promise could have rendered Harnal immune from flies and left its childrens' eyes healthy and bright. The little place was as clean as the regimental lines in which most of its manhood had passed many years. The personality of such a hamlet is hard to put on paper. There is little of Arcady in its twisting maize of narrow lanes like the threds of a dusty cobweb, in the secluded womens' apartments, in its huddle of roofs from which the eye roved over vastness-a terrible naked brown giant of a plain. Nevertheless there is a sunny romance of pastoral life in the wide spaces beyond the village wall, in the shaded bathing pools and sacred peepul trees, in the women at the well and the men behind the plough and the children herding home the cattle in a halo of silver dust. A village very strange to Sussex eyes; no shops, nor police station, nor cottage hospital; no drains, street lamps, pillar box; no playground, club, nor pub; not a butcher nor baker nor candlestick maker nor man to wind the clocks. There are simply the dwellings of the people and, beyond their homes, their fields with such crops as God waters, for irrigation there is none.

Ritual finds its home in Harnal because its inhabitants are Brahmans. There are three hundred souls in the village; boyhood follows the plough and manhood the sword so that ceremony holds sway linked to ritual and drill. The schoolboys salute instead of salaaming; they march in steady ranks, correctly sized, to public worship. They speak no word of English save such words as come home with the sepoys:--"Right turn", "Left wheel", "Three cheers" and "God save the King" are father-tongue to Harnal. The youngsters are a great feature in the village life; their young voices thrilled the air with a song they saug about the war, in which Britain's deeds and Britain's King represented triumph and a conqueror and no nonsense. Our arms had turned the Germans out of Paris and victory was within our grasp when it pleased us to take it. Thus did history, like a popular novelist, adapt fact to desirable fiction in order to immortalise an idea! The boys came and went silently and respectfully among the elderly men, and were appealed to for the proper spelling of a name whenever I required to write one down. They trotted contentedly to their vernacular school, where a dear old grey-beard had taught the youth of Harnal for 40 years, and were clean and wholesome and sturdy lads without an organised game as far as I could see, with strict religious observances, and with much self-assertion in the adoring zenanas! I met them first drawn up in line on the outskirts of the village; the most quaint little tribe. By their side was a line of the village manhood, many ancient acquaintances among them and much intimate association with old Frontier expeditions. The lengthy greetings over, I found myself installed in a comfortable little guesthouse, while the Mahomedan servant had a small tent to live in, and cooked for me in the open.

I stayed there four days and a routine established itself. The Subadar Major called betimes and great and hospitable bustlings went on in the little garden after the murmur of morning worship in the temple had ceased. After I had breakfasted and emerged onto the verandah the old officer greeted me cheerily and we generally went for a walk over the village fields.

Being a man he naturally and inevitably took me to see some trees which were a landmark for miles round; I do not think - I remember any woman insisting on an expedition of the sort. Together we ranged over the flat plain and he led me to the burning place and showed me where his wife's ashes had rested. It was a blue and golden day, the air tingled, and the old man stood, a venerable figure, beside the grey rock and green grass where my friend's quiet old body had gone back to dust, and raising his hands for a moment he prayed aloud for the repose of her soul. Trudging along beside me he told me that he had been loath to contract another marriage, "for I remembered her daily". But, he said, his family had persuaded him to take another wife, for "our customs are very hard, there was no woman in my house who could answer me when I spoke." Hence a new marriage with a young girl and the birth of a baby daughter.

In the afternoon I went to tea with the son of a late Subadar of the 27th Punjabis, who was Ressaldar Major of the 6th Cavalry and had returned from France. His only son was then with his regiment in France. All the Sardars were assembled in the house, and, while I had tea at a little table a few feet from them they had tea at a larger one and we all talked war. Not the Great war only; the men who had fought in Burmah and in Somaliland, in Afghanistan, and on numerous Frontier expeditions put in their word and when we added up the countries in which the little gathering had fought, the map of a very large world seemed to have tumbled into the lap of little insignificant Harnal. But it must be admitted that those who had adventured to Europe spoke the longest and loudest and held to the last word Hira Singh recounted to us the doings of French memsahibs, their speech, their hard work, their kindness and their amazing ignorance of the Brahmanhood which rejected cooked food from their hospitable hands. The gallant Ressaldar Major said with something of a chuckle, "without doubt there is but one God. One God only. Had there been two, one for me and another for the Europeans, I should have been

a very frightened man in France!" And the little remark was well received by the fighting men, though perhaps it would have had but a faint echo in the zenana to which I went directly tea was over.

Ah those pathetic zenanas! Stately women greeted me and the room was filled with graceful girls, babies on their hips, in their arms, and crooning at their feet. I sat beside my hostess and ever and anon some woman would attract attention from the farther end of the little apartment with a call, 'Memsahib! Salaam!' and as the moments passed relationships were iden-"Behold! Memsahib, this is the sister of the Sahib's orderly. The little son of the orderly has died." The room was filled then with that piteous story, a soldier's one precious little son dying during his absence at the Front. And the womanhood there realised all too well the tragedy for the mother. Then again the woman took up another tale—"Memsahib, this is the daughter of Havildat H-Her marriage is yet unmade. Two years have gone and it is yet unmade. He cannot get leave. We do not know why he cannot get leave." A very bashful little maid she was and there was tragedy in her eyes. I called her to me and soon the whole room was alert, while they listened to my account of western maidens who would never marry now "because so many of our young men have given their lives in the war, and it is our custom that a sahib may only have one wife" Obviously it brought them comfort, the fact that high and low suffered together in this matter. And watching the auxiety in their eyes I told them how, when I had visited Indian soldiers in Hospital in England, I had found that their talk to me was always of their homes in India, their children, their mothers, and their wives. The next day the menfolk told me that that had greatly comforted the women, who feared lest the men should take European wives and forget them. The zenanas spoke of the King, of the 'excellent arrangements' of Government, of the atrocities of the Germans, of the exploits of their own men. They spoke too, very softly, the names of the Sahibs of the regiment who had fallen in the war.

My hostess held my hand and with tears streaming down her fine old face she talked of her son. "He writes always to me. To her! (indicating her daughter-in-law), he does not write. Memsahib, they tell me it is four years but to me it is one hundred years. He was my little little baby and they said to me "he is a strong young man and shall fight!" When I left the zenana the Ressaldar Major asked me restlessly if I had been able to comfort his wife, "The presence knows that at this time we men know that nothing can be done. It is good to fight now. But the woman are different, they have no understanding in this matter." He put on spectacles and read me the last letter received from the young soldier in France, "Tell my mother not to weep. All is well with me".

Each day I went to tea with one or other of the retired Indian Officers and Sardars and every occasion the procedure was the same. First tea among them, but at a separate table, then a visit to the zenana in which were assembled all the women of the village, then a reading of old letters. Only the old Subadar Major refrained from producing the worn sheets of paper signed by British Officers. "I have no need of chits. That the Memsahib has come to Harnal—that is my chit!" hedeclared stoutly, and with tact he brought me when I was alone letters written to him by my husband from three Fronts. "For I thought that you would feel sorrowful to see the writing of the Sahib".

One day in the Zenaua a very touching introduction was made to me, for the crowd of younger women parted and I was presented to an old woman who had been a young bride when she married the first Subadar Major of the 27th Punjabis, Ghanesha Singh, who rode from Harnal to enlist in Rawalpindi in the early and worst days of the great mutiny. Blind and feeble, they lifted her up and placed her hands between mine and she expressed her regret that she was unable to be my hostess as she would have been 'had the Subadar Major been living.' Meeting her thus it seemed to me that, as our hands touched, all the history of women watching afar off in strange and terrible wars during the

last sixty years of the Army of Romance lay between her and me, linking heart to heart and life to life. And I thought of the letter written to me by the widow of Sohanu, a gallant Dogra Subadar of the 27th Punjabis, who lost his life very dreadfully searching for his young British Officer in Mesopotamia. (Both were reported 'missing' but I think that in the Other Life he very surely found his young Sahib.) His widow wrote, "In receipt of your mourning letter I beg to say that though I am sorry upon the ceath of my husband I am glad to hear that he has sacrificed himself for his own Government, and I am happy upon this that every man will die at last and it is a good death of all deaths. Surely a fine echo of,

......Songs that ring,
Round banners of a cause, or King,
From Armies bleeding white.

Each evening after I had dined the womenfolk of the Subadar Major's house-hold came and sat with me awhile and once, when on my morning ramble, I came across them and one or two other women performing their devotions under the peepul tree. Each woman had made her tiny offering of rice and flowers, and each twisted round the tree-bole a tiny thread, which had the same significance, the Subadar Major told me, as the thread worn by the Brahman. Then, telling their beads, the women pattered round the tree in an endless circle. "Won't they become giddy?" I enquired. "Nay, Huzoor, they have this custom. Without the customs of religion no woman can have happiness," he replied, and asked them indulgently, "How many chukkers this morning, my daughters?" to which they answered, "One hundred and one." "Oho, they have a very big prayer in their hearts today!" he said, and we left them circling and circling.

I expressed a wish to enter their dharmsala and in a few hours a congregation was summoned, and the village througed to church. The boys marched first, singing their war song, and the elderly men followed sedately. It was a curious scene in the little whitewashed place of worship. A man whom I remembered

as a havildar officiated as the Grunthi and among the men seated crossed legged on the floor were many familiar faces, one or two invalided men and several wounded. I was provided with a chair and on either side of me sat the Indian Officers. women crowded together on one side of the floor. They were not veiled unless they happened to be within the direct vision of a brother-in-law or a father-in-law, men to whom they must never unveil and whom they should never address directly. They sang Sikh hymns vigorously and presently the Grunthi fascinated me by a performance which resembled a habit of my own as a little girl; he invoked guidance by a prayer and then opened the Grunth at random, the writing which met his eyes becoming the message for the day. After he had read it aloud-while we stood as for the gospel—they sang another hymn and then we sat down and the old Ressaldar Major preached a sermon, a manly exhortation to serve God and honour the King. Then they prayed for the soul of one of their regimental Sahibs. The service was brought to a close by the whole congregation standing and repeating in English the four words God Save The King.

Each day a few women gathered outside the little gueste house, having walked long miles to see me and lay before me some difficulty. Their troubles were typical, I imagine; a mothrhad been nominated for the slender pension in the event of herson's death and when the sepoy was reported 'missing' and then 'killed' in Mesopotamia she turned away his widow and little daughter, who thus became penniless dependents in the widow's parents' home. The mother had two sons doing work on the land and by no means required the pension for her support. Another case was that of an old widow left with two widowed nieces and their little daughters, and three small nephews. The eldest boy had just run away and enlisted and the poor old woman was distrought with grief. Doubtless the lad was keen to join the army and tired of the home-life with women-folk, but for all that he was the indispensable male and the poor woman had the sympathy of the villagers. The other cases were generally difficulties arising from too small allotments or due to delay

and miscarriage of payments. I found it difficult to understand the women, both in the zenanas and in these morning gatherings on my veranda, but in the end by speech, gesture, manner, we always arrived at a very vivid realisation of eachothers' meaning. I never encountered a baffling wall of non-comprehension and indifference. When the women from afar brought their tales of war I settled myself down with a pencil and a penny exercise book and the old Subadar Major seated himself beside me and drew forth the stories. I made notes and then read them aloud to him to test whether I had understood the matter aright. Afterwards I forwarded the cases to depots and received very cordial replies; none of the tales were repudiated. It was a pathetic half hour and the comfort which the women appeared to receive from a patient listener amazed me. Workers for the Soldiers and Sailors Families Association in England encounter very much the same sort of cases but might have envied me the atmosphere of gratitude and submission. The mothers who had sons as prisoners of war cried very bitterly from fear that they starved and I felt helpless to heal their trouble; but the Indian appears to prize even temporary alleviation of grief and the men assured me that I had brought much comfort to the zenanas.

The days of peace may come when little Harnal will seem as a dream to me, a memory of one of those sunlit places where my caravan has rested, but until that day dawns and the shadows flee away the realities of war will dwell there sternly, calling its youth to the battle field, sending home its sick and wounded, filling its women's eyes with tears.

### BIOGRAPHICAL SKETCH.

Bv

BRIGR. GENERAL R. G. BURTON, INDIAN ARMY.
VII. JOHN NICHOLSON.

It is a truism that in virile nations great crises produce great men to deal with them; a people or an Empire that fails in this respect and is bankrupt in men of action and genius must be poor indeed. In fact the absence of great men connotes national and racial decline, and those nations which suffer from a dearth of leaders, both military and political, in time of stress, are surely going the way of ancient Greece and Rome.

What a galaxy of talent was produced by the events of the French Revolution! What an absence of great men is evident today after the cataclysm in Russia! It would be interesting to enquire into the causes of national decline from this point of view. In a suggestive article written many years ago, Archibald Forbes. a man of great character and discernment, said "Surely the first stage in the deterioration of a nation must have for its mark the decadence of patriotism. From bad seasons, dull trade, flagitious misgovernment, a nation, if its heart be sound, may recover, but the ailment of waning patriotism is fatal." Machiavelli tells us that ancient Rome and Sparta were free and strong for many ages, thanks to their armies drawn from the people. The primary cause of the fall of Rome was the inclusion in the army of the mercenary Goths. "In the same Book on The Art of War the Florentine says:-" The decline of military skill in Rome began from the time when science and talent were despised, and only those gained distinction who knew how to please the authorities." Gibbon, reviewing the causes of national decline, penued a famous passage:-" The theory of war was not more familiar to the camps of Caesar and Trajan than to those of Justinian and The iron of Tuscany or Pontus still received the keenest temper from the skill of the Byzantine workmen. In the construction and use of ships, engines, and fortifications, the barbarians admired the superior ingenuity of a people whom they so often vanquished in the field. The science of tactics, the order, the evolutions and stratagems of autiquity, were transcribed and studied in the books of the Greeks and Romans. But the solitude or degeneracy of the provinces could no longer supply a race of men to handle those weapons, to guard those walls, to navigate those ships, and to reduce the theory of war to bold and successful practice."

But sixty years ago the English nation showed in this respect no sign of decline. In no period of our history has the hour more certainly produced the man than in the dark days that descended upon India in 1857. The most heroic figure of those times was John Nicholson. To this day you may hear his name on the Punjab Frontier, and thirty years ago at any rate it used to be said among the natives of the Peshawar Valley that the hoofbeats of his charger were still heard by night.

Nicholson joined the Bengal Army as an Ensign in 1839. He soon proceeded on service with his regiment, and was among the prisoners taken by the Afghans at the capture of Ghazni in 1842, when he led his men to the attack three times in defiance of the order given to surrender, and drove the enemy from the walls at the point of the bayonet. He was released after a few months' captivity. Those were stirring times when "years chased bloodstained years with wild red feet"; war followed war in quick succession, and in 1845 Nicholson was again on service in the First Sikh War. He was now adjutant of his regiment, with which he was present at the battle of Ferozeshahr, but had no special opportunity of distinction. He came under the notice of Henry Lawrence, British Resident at Lahore, after the war, and was by him sent to Kashmir with the new Maharaja Gulab Singh, who had asked for the services of some British officers to train his troops; but, after a short time at Jammu, Nicholson was appointed an Assistant to the Resident at Lahore, where his career was now assured in company with the body of men of talent selected by Henry Lawrence, and including Edwardes, John and George Lawrence, Reynell Taylor, Lumsden, Abbott, and others who were to make their mark in the history of India. He was soon placed in charge of the Sind-Sagar Doab, between

the Jhelum and the Iudus. The work of a Civil Officer on the Frontier in those days was largely of a military nature, and it was not likely that a soldier would lose his military instincts. Nicholson had not only to attend to civil work, but had to see that the Sikh troops in his district were maintained in an efficient state, and to act energetically in case of any disturbance. Energy and strong measures were necessary in a country where heads of claus kept in their pay large bodies of Sikhs, Afghans, and Hindustanis, and levied blackmail from the Margalla Pass to Attock. Regular pay to the soldiery and severity tempered by redress of real grievances were found to be the best remedy for this state of affairs, and by the end of 1847 Nicholson was able to report to the Resident at Lahore that "the country round Hasan Abdal and Rawal Pindi, hitherto more or less disturbed, is perfectly quiet, and the revenue officers, for the first time for years, move about without guards."

The outbreak at Multan in 1848, which was followed by the Sikh rising culminating in the Second Sikh War, found Nicholson at Peshawar as Assistant to the Commissioner, Colonel George Lawrence. The Multan outbreak was the signal for disaffection throughout the whole of the northern Punjab, and Nicholson raised a force of local levies for the maintenance of order in his district. With this force he moved between Peshawar and Attock, doing his best to prevent the march of Chattar Singh with an Army to join the Sikhs on the Chenab. In the course of these operations he carried out a remarkable attempt against a tower on the Margalla Pass, the possession of which he hoped would enable him to hamper Chattar Singh's movements. The tower, which was held by a small garrison, had no other entrance than an opening ten or twelve feet above the ground, and was entered by means of a ladder which the defenders drew upafter them. He led the way to attack, and many of the trusty chiefs who followed him were shot down, but the main body of his levy hung back, and although he attempted to tear out some blocks of stone from the uncemented wall under a shower of rocks from above, the operation was found impracticable, and he reluctantly withdrew his men. It was on this spot that a monument was erected to his memory by some of his friends after his death at Delhi eight years later.

When Lord Gough took the field against the Sikhs, Nicholson joined him with his levies, and acted as one of the political officers on his staff throughout the campaign which ended in the annexation of the Punjab. For his services he was twice mentioned in Lord Gough's despatches. He accompanied the pursuing force under Sir W. R. Gilbert which followed up the Afghans after the battle of Gujerat, took their guns at Attock, drove them across the Indus, and sent them flying down the Khyber Pass.

When the Punjab was annexed, Nicholson was appointed Deputy Commissioner of Rawal Pindi. It was in this district that in 1849 a sect for the worship of John Nicholson was founded by a Hindu devotee, who began to preach the creed of the Nikalsain religion at Hasan Abdal. The founder of the sect was expelled from the district by his new god, and took refuge in Hazara, Major Abbott's district. When Nicholson was transferred to Derajat a few years later, the devotees followed him, but were sent back to Hasan Abdal. The sect flourished for some years, although it is related that flogging and imprisonment were all the reward which Nicholson bestowed upon his worshippers. But they took their punishment like martyrs, and the more they suffered at his hands, the louder would they chant their hymns in honour of the mighty Nikalsain.

Nicholson went home on furlough in 1850, and was appointed Deputy Commissioner of Bannu on his return to India in 1852. Here he quickly established order in a very turbulent district. John Lawrence was now Chief Commissioner of the Pnnjab. In 1853 he wrote to Lord Dalhousie, the Governor-General:—" I look on Major Nicholson as the best district officer on the frontier. He possesses great courage, much force of character, and is at the same time shrewd and intelligent. He is well worth the wing of a regiment on the border, as his prestige

with the people both on the hills and plains is very great. He is also a very fair civil officer, and has done a good deal to put things straight in his district."

Of Nicholson's methods we learn something from his own words and from those of the Chief Commissioners under whom Thus he writes to Sir Henry Lawrence:-"I feel that I am little fit for regulation work, and I can never sacrifice common sense and justice or the interests of a people or a country to red tape." He was seen to kick regulations across his room. That he was hot-tempered is evident from a letter in which Henry Lawrence exhorts him to curb his temper, and forbear with both natives and Europeans. "The world would be a mass of tumult if we all gave candid opinions of each other. I admire your sincerity as much as any man can do, but say thus much as a general warning". That he was a strong man is clear from John Lawrence's instructions referring to somewhat summary methods of dealing with criminals:-" Don't send up any more men to be hanged direct, unless the case is very urgent; and when you do, send an abstract in English, and send it through the Commissioner." It must not be supposed, however, that he was hasty or unjust, and he could be lenient when the circumstances demanded it. He was a strong man, and in him we see the fact exemplified that hasty judgment does not imply decision of character but is a weakness to be overcome. Rather did his methods exemplify the saying of Marcus Aurelius-"Say and do everything in accordance with the soundest reason". For decision of character it is not necessary that judgment should be harsh or hastily formed without due reflection.

In 1856 Nicholson was attacked by a Ghazi whom he shot. An account of the incident is given in a letter he wrote to Edwardes. "I' was standing at the gate of my garden at noon, with Sladen and Cadell and four or five chuprassies, when a man, with a sword drawn, rushed suddenly up and called out for me. I had on a long fur pelisse of native make, which I fancy prevented his recognising me at first. This gave time for the only chuprassie who had a sword to get between us, to whom he

called out contemptuously to stand aside, saying he had come to kill me and did not want to hurt a common soldier. The relief sentry for the one in front happening to pass opportunely behind me at this time, I snatched his musket and, presenting it at the would-be assassin, told him I would fire if he did not put down his sword and surrender. He replied that either he or I must die. So I had no alternative and shot him through the heart, the ball passing through a religious book which he had tied on his chest, apparently as a charm".

A good sketch of Nicholson at this time was written by Sir Richard Pollock who met him at Bannu-" He was gifted with a powerful physique, a commanding figure and manner, and at once impressed those who had to deal with him as a man of indomitable energy, a very terror to evildoers. His mind was concentrated on the particular matter in hand, and his sense of duty and devotion to his work never relaxed. Edwardes found Bannu a valley of forts, and left it a valley of open villages. Nicholson found it a hell upon earth, and left it probably as wicked as ever, but curbed to fear of punishment. His powers of investigation were great and his methods severe, and people who wanted to kill an obnoxious cousin learnt that they could only do so by running a considerable chance of being hanged. Nothing seemed to tire him; a ride of twenty or thirty miles before breakfast to see a boundary or scene of a crime, in no way interfered with his working on in court through a long summer day with the thermometer over 90. Though very prompt when quick action was required, he could be very patient when patience was needed; his judgment was excellent, and his knowledge of character great, and he could bear with fools and even criminals when they were useful to him. His saying used to be, "Never remove a native official unless you know that you can get a better one, otherwise you will get an equally stupid or corrupt man, minus the experience of his predecessor." His wonderful activity and endurance made a great impression on the border people, and a Peshawari said of him, "you could hear the beat of his horse's hoofs from Attock to the Khyber." He knew not only when to

be severe but when to pass over an offence lightly, a rare attribute. Such was the effect of his measures in the Bannu District that he was able to write-" Making out the criminal returns for 1855 the other day, I found that we had not had a single murder or highway robbery, or attempt either, in Bannu throughout the year." Nicholson was sent to Kashmir in 1856, and on his return a few months later was made Deputy Commissioner at Peshawar, where his friend Herbert Edwardes was Commissioner.

On the night of the 11th May 1857, news of the outbreak of the mutiny at Meerut reached Peshawar, where Nicholson was to take a leading part in the suppression of revolt before marching to the final and most dramatic scene of his life. The native troops at Meerut had risen the day before, killed all the Europeans they met with, and gone off to Delhi. It is unfortunate that there was in the garrison no senior officer capable of dealing with the crisis. There was a Divisional Commander in a state of senile decay, and a station commander of weak and vacillating character. There were in garrison two batteries of English Field Artillery, the Carbineers, consisting mainly of recruits without horses, but no doubt capable of fighting well, and a Rifle battalion. But there was no Gillespie or Nicholson ready to wield the weapon ready to hand. A fatal inaction characterised the Europeans. Where vigorous action might have arrested the Mutiny at its outbreak, nothing was done, and the mutinous troops marched unmolested to Delhi.

Delhi is the historic capital of India. On its time-worn walls broods the prestige of a thousand years of empire. In every great city of India is a Delhi Gate, and as in Europe all roads led to Rome, so in India all roads lead to Delhi. Here the effete descendant of the great Mughal Emperors sat in tinsel state in the palace of his fathers. The streets of Delhi had often run red with blood, but not with that of English, when the hosts of Timur the Tartar, of Nadir Shah the Persian, whose massacre of the inhabitants gave its name to the Gate of Blood, and of Ahmad Khan Durani had made their triumphant entry into the capital of Hindustan. In former times he who ruled

Delhi ruled India; indeed the same may be said of Delhi sixty years ago; and is it not so today? The prestige of its possession was felt through—out the length and breadth of the land. Here too was established the greatest magazine in the country, although the dangers of its position had been pointed out by more than one Commander-in-Chief, but, with fatuous lack of foresight, that is unfortunately not without parallel in our history, its removal had been postponed from motives of economy. Yet Delhi was held for the English by a few regiments of mercenary troops!

Early on the 11th May some of the mutineers from Meerut arrived in Delhi. Here also the troops rose. Many Europeans were massacred in the palace and in the streets, which saw for the first time the blood of white men. Fortunately the Magazine was in charge of a few heroic men, who, after a brave defence, blew it up. That the mutiny, which now spread rapidly throughout the Bengal Army, did not assume formidable dimensions in the Punjab was due to the action of a few determined men, one of whom was John Nicholson.

When the news of the outbreak reached Peshawar a council of war was held by General Reed, Commanding the Division, at which Brigadier Cotton, Neville Chamberlain, commanding the Punjab Frontier Force, Edwardes and Nicholson were present. It was resolved to form a movable column under Chamberlain, and to advise the Chief Commissioner to authorise the raising of local levies. But Sir John Lawrence does not appear at first to have grasped the serious import of the situation. He would not sanction the raising of levies until Edwardes had personally urged the necessity of the measure, nor would he assent to Nicholson accompanying the movable column as political officer. revolt progressed, however, the Chief Commissioner grasped the situation, and levies were rapidly raised and other measures taken for the security of the Punjab. It is curious, however, to find John Lawrence at one time even suggesting that Peshawar should be handed over to the Afghan Amir in return for his assistance in suppressing the rebellion. Edwardes and Nicholson strongly

opposed this suggestion, and the Amir's assistance was not found necessary.

Meanwhile the news from Delhi, and delay and inaction in many places, was weakening the prestige of Government. dition was rife among the troops at Peshawar; a regiment at the neighbouring station of Nowshera mutinied; and as it appeared to the people of the district that the star of the British Raj was waning, they did not come forward for enlistment in the levies. Nicholson and Edwardes now went to the General and advised the disarmament of the native troops. This measure was carried out. The result was instantaneous. The air was cleared as if by a thunderstorm. On the return from the disarmanent parade hundreds of men flocked to the standard from the surrounding country and the ranks of the levy were quickly filled. They were eager now to fight for those who by masterful action had proved themselves rulers of the Punjab. Nicholson had a short way with sedition. He hanged a fakir who was found with a seditious letter and a large sum of money, evidently for purposes of bribery, in his possession; and he imprisoned the editor of a native newspaper for publishing false news.

On the day after the disarmament at Peshawar Nicholson rode off to Mardan with a small force, including his Afridi and Yusafzai levies, to coerce the native troops there who were reported to be about to rise and join those who had mutinied at Nowshera. On the approach of the column, the mutineers moved off towards the neighbouring hills, pursued by Nicholson at the head of his men. Numbers were killed, many being sabred by Nicholson himself, who was twenty hours in the saddle and covered seventy miles. Out of 150 captured, 40 were afterwards blown from guns, a summary method of disposing of mutineers which we adopted from native custom, but unsuitable in these days when sentimentalists are always on the side of wrongdoers.

Meanwhile the siege of Delhi had been undertaken, and Nicholson was appointed to command the Punjab movable column in place of Chamberlain, who joined the staff of the army on the Ridge. With the movable column were two Bengal native Infantry Regiments which were ripe for mutiny. It had already been found necessary to blow from guns two men of one of these regiments.

On the 21st June Nicholson took over the command of the movable column at Jullundur. It is interesting to note that the future Lord Roberts was his Staff Officer, though only for a short time, as he was then ordered to join the artillery before Delhi. Lord Roberts has recorded that Nicholson's genius for command was felt by every officer and man in the column; and that" he always seemed to know what to do and exactly how to do it"; which is indeed the secret of success not only in war but in all the affairs of life. Nothing astonishes men so much as common-sense and plain dealing; all great actions have been simple.

It has already been related that with the Punjab Movable Column were two infantry regiments of the Bengal Army; these were known to be disaffected, and it was necessary to disarm them. It is instructive to learn how Nicholson carried out this measure. The Column was to march to Phillour on the day when he determined to carry out this measure. His artillery marched at the head of the column, followed by the 52nd Foot. After them at intervals marched the two native battalions. Nicholson rode ahead in the night and fixed on the site for the operation. On arrival at the camping ground the 52nd were drawn up with the guns unlimbered on either flank, and the native battalions were so marched up, that they found themselves face to face with the British troops, and were thus disarmed in succession without trouble.

On the 9th July a mutiny broke out at Sialkot where some Europeans were murdered, and the same day the mutineers marched off towards the Ravi, taking with them much plunder and the station time gun. Nicholson was now at Amritsar with his column. His first act on hearing of the Sialkot outbreak was to disarm the native troops in the station. He then prepared to march to intercept the Sialkot sepoys, reports received during the day indicating that they were making for Gurdaspur

in order to raise the troops there. From there, wrote Nicholson to the Adjutant-General, "they would have proceeded via Nuipur and Hoshiarpur to Jullundur, whence they could have made the best of their way to Delhi". It was evident that as the mutineers had two days' start and as Gurdaspur was something over forty miles distant, no time was to be lost. Collecting all the ponies and ekkas and other vehicles available for the transport of his white troops, Nicholson decided to reach Gurdaspur in a single march, although it was the hottest time of the year. marched at 9 o'clock on the evening of the 10th July, and reached Batala, 26 miles distant, in the early morning. Here a halt of two hours was made. Another short halt was made during the hottest part of the afternoon of the same day, and by six o' clock that evening the whole force had reached Gurdaspur after a march of 44 miles.

Meanwhile the rebels were approaching the Ravi, though fifteen miles distant from the river, and were unaware of the presence of the movable column, the fords and ferries of the Ravi being carefully watched so that no news could get through. Nicholson's idea was to allow the enemy to cross the river before attacking them, thus preventing their escape. He marched on the morning of the 12th, and at noon came in contact with the rebel cavalry patrols. They had crossed the Ravi with all their baggage and were now drawn up in line about a mile from the left bank, their infantry in the centre, which was covered by a deep narrow nullah, and the cavalry on the flanks. Telling his men to reserve their fire until within 300 yards of the enemy, Nicholson advanced his troops in two lines with guns on either flank and opened a deadly fire on the mutineers who, at that range, could do little harm with their smooth-bores. Within half an hour the enemy were driven back on the river, leaving 120 dead on the field. They were followed up, and driven into the river, through which the survivors made their way to an island in midstream where they had planted the Sialkot station gun. two days later Nicholson attacked and destroyed the remainder, to the number of four or five hundred.

The Punjab had now been completely pacified. Strong measures had struck terror into the hearts of would-be rebels, and had confirmed the inhabitants in their allegiance. Reinforcements were badly needed at Delhi, and Nicholson was ordered to march his column to join the besiegers. His fame had preceded him, and the reinforcements of 3000 men he took with him were almost as welcome as their commander. It was said that Napoleon's presence on the field of battle was worth 80,000 men; and there can be no doubt of the value of one man of great personality in times of crisis. Nicholson's personality was in every respect such as to inspire confidence. "He was a man cast in a giant mould, with massive chest and powerful limbs, and an expression ardent and commanding, with a dash of roughness; features of stern beauty, a long black beard, and a deep sonorous voice. There was some thing of immense strength, talent, and resolution in his whole frame and manner, and a power of ruling men on high occasions which no one could help noticing. His imperious air, which never left him, and which would have been thought arrogance in one of less imposing mien, sometimes gave offence to the more unbending of his countrymen, but made him almost worshipped by the pliant Asiatics." was 34 years of age.

Nicholson went on to Delhi ahead of his men to obtain a knowledge of the situation, and inspected all the batteries and detences on the Ridge. He rejoined his column at Rhai, two marches out, on the 12th August, and marched into camp two days later.

While Nicholson was marching to Delhi with his column, a siege train had been fitted out at Ferozepur to assist in the siege. This left Ferozepur under a weak escort on the 10th August. The rebels, hearing of its approach, detached a large force with sixteen guns to intercept it and to harass the rear of the besieging force. News of this movement reached General Archdale Wilson, Commanding the army on the Ridge, on the 24th August, and Nicholson was ordered out to deal with the mutineers. Nicholson moved out at daybreak on the 25th August at the

head of 2500 men, consisting of three troops of horse artillery, a squadron of the 9th Lancers, some Guides, Punjab Cavalry, and Multani Horse, a wing of the 61st Foot, 200 of the 1st Bengal Fusiliers, and some Coke's Rifles and Punjab Infantry.

The rain was falling in torrents, the roads were little more than swamps, and at times the water was over the backs of the horses; an artillery officer said that "he thought that they could not possibly get out of their difficulties. But he looked ahead and saw Nicholson's great form riding steadily on as if nothing was the matter, and he felt sure that all was right." At 5 o'clock the whole column had crossed a deep ford over the marsh in front of Najafgarh, where the enemy had taken up a strong position. While his troops were crossing the ford, Nicholson decided on his dispositions for attacking the enemy whose line extended for nearly two miles from the town of Najafgarh on their left to the bridge over the Najafgarh canal on their right. Their strongest post was an old serai on their left centre, in which they had four guns; there were nine more guns between this and the bridge.

Night was fast approaching, and decisive action admitted of no delay. The Brigadier determined to attack the serai and force the left centre, when, changing front to the left, he could take the guns in flank and roll up the line towards the bridge. A hundred men of each corps were kept in reserve; the 61st Foot, the Fusiliers, and 2nd Punjab Infantry were formed up, with four guns on the right and ten on the left flank, supported by the squadron of 9th Lancers and Guides Cavalry. Nicholson then rode down the line telling his men to lie down behind a low ridge on which his guns were posted. The batteries now opened fire, and in a short time Nicholson gave the word to advance to the attack. Amid. a heavy fire the infantry moved forward, while their leader, riding, in front, cheered them on until they were within thirty yards of of the rebel batteries; he gave the word "Charge", and with a volley and a loud shout they rushed upon the guns, and carried the serai at the point of the bayonet. Changing front, they then swept down upon the bridge, and the rebels, finding their whole position turned, fled across the bridge, having suffered heavy loss

and leaving thirteen guns in the hands of the victors. It was supposed that the battle was over, when a report was received that a village in rear was still occupied by rebels. Nicholson wrote in his despatch-"I immediately sent orders to Lieutenant Lumsden (1st P. I.), who was then nearly abreast of the village to drive them out; but though few in number, they had remained so long that our troops were on all sides of them, and seeing no line of retreat they fought with extreme desperation". Lumsden was killed and his troops driven back. The 61st were then sent up, but darkness came on and the enemy evacuated the village during the night. The remainder of the enemy retreated to Delhi. The force returned to camp on the Ridge next morning, having suffered a loss of three officers and a hundred men. General Wilson wrote in his despatch-"To Brigadier-General Nicholson's judgment, energy, and determination, I attribute mainly the glorious results of the expedition, and next to the steadiness and gallantry in action and the cheerfulness under great privation and fatigue, exhibited by the officers and men placed under his command."

The drama on the Delhi Ridge was now drawing to a close. The siege train arrived on the 3rd September and batteries were rapidly constructed. On the 8th September Ludlow Castle was seized, and fresh batteries were completed and armed. Although the purpose of this narrative is not to give an account of the siege and assault of Delhi, the brave and devoted conduct of the natives employed in the construction of the batteries should not pass unnoticed. "These were merely the unarmed native pioneers, and not meant to be fighting men. With the passive courage so common to natives, as man after man was knocked over, they would stop for a moment, weep a little over their fallen friend, pop his body in a row along with the rest, and then work on as before." Thirty-nine were killed and wounded in one night, but with rare courage the men continued their work.

The walls were soon breached in several places by an everwhelming fire continued day and night, and, all being ready, the 14th September was fixed for the assault. During the period he

had been on the Ridge before Delhi, Nicholson had exercised great influence on the operations. General Wilson was a man of weak and vacillating character, who shirked responsibility and reluctantly assented to the assault. In his Forty-one years in India; Lord Roberts, who was present throughout this period, says-" Standing on the crenellated wall that separated Ludlow Castle from the road, I saw Nicholson at the head of his column, and wondered what was passing through his mind. Was he thinking of the future, or of the wonderful part he had played during the past four months? At Peshawar he had been Edwardes' right hand. At the head of the Movable Column he had been mainly instrumental in keeping the Punjab quiet, and at Delhi everyone felt that during the short time he had been with us he was our guiding star, and that but for his presence in the camp the assault which he was about to lead would probably never have come off. He was truly 'a tower of strength'. Any feeling of reluctance to serve under a Captain of the Company's army, which had at first been felt by some, had been completely overcome by his wonderful personality. Each man in the force, from the General in command to the last-joined private soldier, recognised that the man whom the wild people on the frontier had deified was the one who had proved himself beyond all doubt capable of grappling with the crisis through which we were passing; one to follow to the death. Faith in the Commander who had claimed and been given the post of honour was unbounded, and every man was prepared 'to do or die' for him."

The assault was to be carried out by four columns. Nicholson commanded No. 1 column, consisting of the 75th Foot, 1st Bengal Fusiliers, and 2nd Punjab Infantry, in all a thousand strong. He was to storm the breach near the Kashmir bastion. The assault was to have been made at day-break but there was some delay due to the necessity of recalling the piquets that had been out all night. The sun had risen when the heavy guns ceased firing, and Nicholson gave the signal for the attack, himself leading his men and being the first to mount the breach in the curtain near the Kashmir Gate. As

the heads of the columns showed themselves, the rebels opened a heavy fire, and many men fell, but with irresistible valour, inspired by their leader, the stormers placed their ladders and mounted the breach, driving back the defenders from the ramparts. Nicholson's orders were to clear the ramparts and bastions and advance by the road running inside the city wall to the Ajmir Gate. Nicholson was for some time engaged in the attack and capture of various buildings held by the enemy on his line of advance, and eventually reached the Kabul Gate at the head of his column. Here a check had occurred. Beyond this point a lane skirted the ramparts towards the Burn Bastion. The murderous fire of the enemy posted under cover on the Bastion and in the recesses of the ramparts shot down or drove back those who attempted to advance. Nicholson sprang ahead, waving his sword and endeavouring to encourage his troops to continue the advance. At this moment, as he turned to call on his men he was shot through the back, and fell mortally wounded, on the spot now marked by a tablet in the wall. From there he was sent off in a doolie to hospital, but was abandoned by his bearers on the way. Lord Roberts relates:-" While riding through the Kashmir Gate, I observed by the side of the road a doolie, without bearers, and evidently with a wounded man inside. I dismounted to see if I could be of any use to the occupant, when I found, to my grief and consternation, that it was John Nicholson, with death written on his face. He told me that the bearers had put the doolie down and gone off to plunder; that he was in great pain and wished to be taken to the hospital. He was lying on his back, no wound was visible, and but for the pallor of his face, always colourless, there was no sign of the agony he must have been enduring. On my expressing a hope that he was not seriously wounded, he said: I am dying; there is no chance for me. The sight of this great man lying helpless and on the point of death was almost more than I could bear."

Roberts collected bearers and sent him to hospital in charge of a sergeant. Nicholson lived nine days, long enough to hear that the city had been captured. Of his character perhaps suffic-

ient has been brought out in the course of this brief account of his life. Lord Roberts wrote:-- "Nicholson impressed me more profoundly than any man I ever met before, or have ever met since. He was the beau ideal of a soldier and a gentleman. His appearance was distinguished and commanding, with a sense of power about him which, to my mind, was the result of his having passed so much of his life among the lawless tribesmen with whom his authority was supreme. Intercourse with this man among men made me more eager than ever to remain on the frontier; and I was seized with ambition to follow in his footsteps". On a memorial in Lisburn church it is inscribed:-"Rare gifts marked him for great things in peace and war. He had an iron mind and frame, a terrible courage, an indomitable will. His form seemed made for an army to behold; his heart to meet the crisis of an empire; yet he was gentle exceedingly, most loving, most kind. In all he thought and did, unselfish, earnest, plain and true; indeed, a most noble man. Soldier and civilian, he was a tower of strength; the type of the conquering race. Most fitly in the siege of Delhi he led the first column of attack and carried the main breach. Dealing the death-blow to the gieatest danger that ever threatened British India, most mournfully, most gloriously, in the moment of victory he fell mortally wounded on the 14th and died on the 23rd September 1857, aged only 34".

Nicholson's tomb is near the Kashmir Gate. His statue, showing him, sword in hand, calling his men to advance to victory, stands in the gardens at Delhi. His spirit, let us hope, continues to inspire those whose duty it may be to follow in his footsteps.

# THE OAVALRY FIGHT AT VILLE-SUR-YRON 16TH AUGUST 1870.

BY

MAJOR P. W. BURROWES, 25TH CAVALRY (FRONTIER FORCE). In these days of barbed wire and barrages, the discussion of Cavalry action may seem untimely. This may be true, so far as the Western Front is concerned, though more open fighting is now taking place there (June 1918). But in other theatres cavalry can still act in the normal manner. This, therefore, is written for Cavalry Officers who may yet be employed on such fronts.

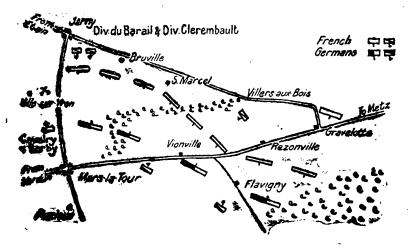
It must often have occurred to cavalry students how little our formal tactics, as explained in our text-books and training manual, correspond with our actual performances in the field. In the one case we read of symmetrical lines, launched simultaneously with a clear objective, and in accordance with a definite plan. In the other, we find objectives mistaken, lines merged in one another, and breathless squadrons arriving late, and thrown into the fight almost at haphazard. It is the old conflict between theory and practice and we should all learn before-hand how great may be the difference between peace training ideals, and war realities: for a leader thus forewarned will be better able to cope with the inevitable hurry and confusion of the combat, and to take advantage of his adversary's difficulties.

The cavalry combat at Ville-sur-Yron is the most recent encounter of cavalry masses, prior to the present war, and it is this encounter which it is now proposed to consider.

On the 16th August 1870, two Prussian Corps had fought hard all day to prevent the escape of Marshal Bazaine's Army from Metz. Hopelessly outnumbered, they were only saved from destruction by the audacity of their action, and by the timidity of the French leadership. Towards evening, however, the German infantry was completely fought out, and their left flank was in imminent danger of being turned by the French: had this occurred, there were still hours enough of daylight, for the whole German force to be driven back into the Moselle. Consequently the

German Commander called upon his available cavalry to act upon his Western flank, so as to check the outflanking movement of the French. Simultaneously the French leader ordered his available cavalry forward, to act upon the Western flank of the Germans.

### Sketch I.



The German Cavalry had been much pulled about during the day, so that divisions, and even brigades had been broken up. Moreover, a great part had already been heavily engaged, and was still needed elsewhere. On this emergency, the following were available:

*Brigadier v. Barby: 4th Cuirassiers, 13th 19th Dragoons 10 Squadrons.

To this brigade had become attached, during the day, from other commands:

10th Hussars, 13th Uhlans, 16th Dragoons, 10 squadrons, and finally when this composite division moved forward to Ville-sur-Yron, under the command of Gen. v. Barby, two squadrons of the 2nd Guard Dragoons, already acting in that area, placed themselves under his command.

Thus Gen. v. Barby, a brigadier, found himself at the head of twenty-two squadrons, a force nearly equal to a continent-

^{*}For strengths of regiments, see sketch 2.

al division. It will be noticed how the German Brigades had been disorganised by detaching regiments in all directions: although highly undesirable, this has frequently happened in past wars, and will again.

On the French side General du Barail was in command of a force comprising Legrand's Cavalry Division, 12 squadrons, the Guard Cavalry Brigade, Gen. de France, 8 squadrons, and the 2nd Chasseurs d'Afrique, 4 squadrons. This last corps represented alone the Cavalry Division of Gen. du Barail, all the remainder being detached. The Division Legrand was also short of a dragoon regiment, from the same cause.

Near this force, west of the village of Bruville, stood also the Cavalry Division of Gen. de Clerembault: by a fatalerror, this division was not united, and sent forward with Gen. du Barail's command. We shall find it intervening altogether too late.

It must here be emphasised that in 1870, all cavalries were inclined to stick too closely to their infantry. Modern cavalry divisions, in such a situation, must have moved out upon the flanks of their respective armies hours earlier, and this cavalry combat would possibly have occurred before mid-day, giving the victors ample time to act upon the flank and rear of the hostile infantry.

# Preliminary movements.

- (a) On the German side:—the horse battery, von der Plawitz, escorted by a squadron, 2nd Guard Dragoons, had worked round the village of Ville-sur-Yron to the neighbourhood of La Grange Farm, whence it threw shells into the French cavalry masses on the ground sloping from Bruville to the ravine of la Cuve.
- (b) French. The French leader determined to capture or drive this battery back, and then to deploy his force upon the plateau of Ville-sur-Yron. The 2nd Chasseurs d'Afrique were entrusted with this task. Quickly crossing the la Cuve ravine, this regiment deployed three squadrons in somewhat open order, kept the fourth in second line, and charged the battery. The latter fired a hasty salvo, failing to check the French,

and brought up the limbers at once, but too late, for the first line of Chasseurs entered the battery at full gallop, and sabred gunners and drivers.

At this moment the escort squadron charged the Chasseurs in the battery, and at the same time a mass of German cavalry was seen approaching from the south. This was the first line of v. Barby's force. The Chasseurs withdrew and rallied under the protection of their fourth squadron. The German battery was also withdrawn behind Ville-sur-Yron, and takes no further part in the action.

# The Approach March (see sketch 2).

### (a) German:-

It is now time to turn to the German movements-Gen. v. Barby formed his heterogeneous command in the conventional three lines, as shown in sketch 2, and advanced from Mars la Tour on Ville-Sur-Yron: he is said to have intended to turn the French Cavalry by the western flank, and throw it back on its infantry across the ravine de la Cuve. We shall see, however, that he failed to retain his reserves in hand, and so allowed his whole project to be ruined by his subordinates.

# (b) French:-

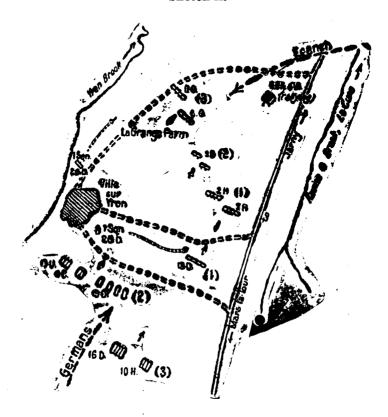
On the French side, Gen. du Barail by now had crossed the ravine de la Cuve with his composite division, and deployed it, facing south, left flank resting on the Jarny highroad. He formed three lines, as shown in sketch 2, and each line was further broken into two echelons. All three lines seem to have deployed at once, and no plan is discernible in the French movements, except that of a straightforward frontal attack.

It should here be mentioned that Gen. du Barail had at his disposal the 5th and 6th Hotse Batteries, which were already in action, between Bruville, and the Ravine de la Cuve. These fired on the advancing German Cavalry, but do not seem to have produced any effect upon them.

We are told in our Training Manual that the Cavalry leader (i) makes a careful reconnaissance (ii) Forms his plan (iii) directs his first line where it can do most good, by manoeuvring

for the enemy's flank (iv) Husbands his reserves to deal the final decisive blow.

### Sketch II:



### French: -

H. Hussars

D. Dragoons

D. G.,, of the Guard.

L. G. Lancers,

c h d A. Chasscurs

d'Afrique

### German:-

D. Dragoons

G. D. Guard Dragoons

C. Cuirassiers

H. Hussars

U. Uhlans

But now we shall see what so frequently occurs in war: the enemy approaches rapidly, and there seems little or no time for plans, subordinate commanders are carried away by their excitement, and the whole force is expended piecemeal and almost at random. These are all dangers for which we must be prepared, so that we may avoid the many mistakes made in the encounter, which is about to be described.

### The first lines.

The first lines, French and German, approached one another at a gallop with their inner flanks resting upon the highroad. The two echelons of the French, eight squadrons strong, crashed into the four German squadrons, and overlapped them on both flanks. A melee ensued, in which the Germans, outflanked and outnumbered, began to give ground: at this moment a squadron, 2nd Guard Dragoous, galloped up from Ville-sur-Yron, and somewhat restored the balance.

### The second lines.

Meanwhile the second lines were coming up and met, between the existing melce of the first lines, and Ville-sur-Yron. The 19th German Dragoons met the 3rd French Dragoons, each four squadrons strong; the remaining five squadrons of the German second line, finding no enemy before them, passed on, inclining to their left, leaving the two Dragoon regiments locked in a second melce.

#### The Third lines.

The third French line now came up at a gallop in two echelons, with its right flank on the track leading to La Grange Farm. The Lancers of the Guard attacked the 4th German Cuirassiers, and three squadrons of the Dragoons of the Guard charged the 13th Uhlans: the fourth (righthand) squadron of the French Dragoons of the Guard had to wheel to its right to meet the attack of the squadron which had been escort to the German Battery (2nd Guard Dragoons), and which now worked round La Grange Farm to take the French in flank and rear.

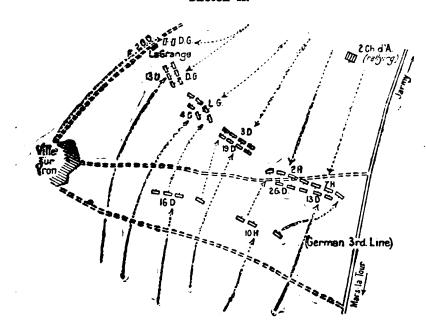
As the crowd of combatants opened out to gain room to handle their weapons, the first and second lines of the Germans (fifteen squadrons) and the three lines of the French (twenty squadrons) formed one vast melee stretching from the Jarny highroad to La Grange Farm: at this point, the Germans possessed a decided advantage, for they still had seven

squadrons of their third line unexpended, while the French had only the 2nd Chasseurs d'Afrique, who had been already somewhat shaken by their attack on the German Battery, and were rallying, very slowly, in rear.

Fortunately for the French, the third line of the Germans does not seem to have had a capable commander. The two regiments, as they came up, separated, and threw themselves almost at random into the melee (see sketch 3) their advent therefore which, skilfully directed and united, might have had the most decisive result, merely served to restore the balance in their immediate vicinity.

The melee lasted over half an hour, till both sides became physically exhausted. The crowds of combatants then drifted apart and began to reform.

### Sketch II.



# Close of the fight.

The French withdrew and rallied, protected by the 2nd Chasseurs d'Afrique, which regiment had now at last reformed and come forward. The Germans rallied near Ville-sur-Yron.

At this moment, on the French side, the cavalry division of de Clerembault crossed the Cuve Ravine, and formed upon the the plateau of Ville-sur-Y10n. Unfortunately, this movement had been delayed altogether too long. Darkness was setting in, and the moment for further action was obviously past. Had the two French divisions been at first united, and sent forward under one capable commander, the German cavalry must have been driven in upon its infantry, which was too utterly battle-weary to resist a fresh attack by cavalry on its flank and rear.

The result, therefore, of this great cavalry encounter, in which, on both sides, in all forty-two squadrons took part, was indecisive: both sides succeeded in checking the opposing cavalry: neither side was able to affect the opposing infantry in the smallest degree. But at least the German cavalry enabled their exhausted infantry to stand fast, and for this reason, they must be pronounced the more successful. On the French side, one of the greatest opportunities of the war was let slip, for want of the habit of concentrating all available forces. The German losses in this encounter are uncertain. The French lost just under five hundred of all ranks, killed, wounded, and missing, about twenty per cent of their strength. Probably the German loss was approximately equal.

### Conclusions.

From this affair, we can plainly see:-

- (a) The importance of energetic leadership, using all available troops at the decisive point—we have seen how great an opportunity was missed by the French, through their habit of acting by driblets.
- (b). The importance of a plan: The leader must set before himself a definite object, and he must control and direct his subordinates accordingly.
- (c) The importance of flank attacks, and the indecisive results produced by a frontal encounter.
- (d). The absolute necessity of saving up the reserves, and of putting them in, with irresistible force, at the right time and place. The German leader had the fight in his hands, and threw it away.

- (e). The importance of rallying quickly, and keeping one's men in hand, as exemplified particularly by the 2nd Chasseurs d'Afrique in their long inaction.
- (1). The necessity of combining fire and shock, and of making use of our horse batteries. Neither side in this affair gave its artillery a real chance of producing useful results.
- (g). Finally the importance of economy in detaching squadrons, and regiments from their commands, and the necessity of rapidly rejoining, as soon as a detachment has done its work. Two squadrons, even with regimental headquarters, cannot be expected to do the work of a four squadron regiment.

We may now consider how such a combat is affected by modern conditions. In the first place, if our peace training is worth anything at all, not to speak of war experience, both sides nowadays would act earlier in the day, and would reconnoite much more carefully:both leaders would contrive to act in accordance with a plan, and it is to be hoped, would control their subordinates more successfully.

It is obvious that the possession of modern horse artillery, and machine guns, would compel a more careful approach march, and would lead to more elaborate manoeuvring, in order to mask the opponent's fire, while facilitating our own: nor probably would both sides choose to fight under the walls of a village, which might be full of machine guns and rifles. In these days, such points d'appui as Ville-sur-Yrou, and la Grange Farm, are no longer neglected. One side or the other would certainly make good use of them. Moreover motor machine guns and armoured cars make roads unhealthy, unless barricaded or destroyed by shell fire.

Lastly must be considered the new factor of low flying aeroplanes. The opposing air forces may neutralise one another: but unless they do, it seems probable that low flying planes, carrying expert machine gunners may render all movements in normal formations impossible, during the approach march. We shall have to split up and extend our units, at all events until the enemy is so close that his planes can no longer safely fire at us. But in war every evil finds its antidote, and we may hope that means of dealing with the lowflying plane will shortly be discovered by our side.

# SUPPLY PROBLEMS in MESOPOTAMIA.

BY

LIEUT. COLONEL E. G. HART. S. AND T. CORPS.

The period covered by this article is from August 1916 to May 1917, that is to say during the reorganisation of the Mesopotamia Expeditionary Force and the advance on Baghdad. It is a peculiarly interesting period as witnessing the evolution of the campaign from its hobbledehoyhood to its growth into a first class war. The problem is here treated from an entirely personal standpoint, as the writer has not had access so far to any official papers except those which came before him in his capacity as an Assistant Director of Supplies at the Base.

Mesopotamia has probably presented the biggest line of communication problem that has ever been set; and all supply officers who have come from other theatres of war to Mesopotamia state that the problem there is of far greater complexity than those met with elsewhere. The name of the country suggests that the means of communications will be river, and the fact that historic water ways, offering good and apparently unlimited means of communication, exist throughout its length has led to their being considered as the best and principal means of communications, whereas recent efforts have shown we would probably have done far better from the first to have prepared other and more reliable means of supplying our Forces at the front.

# Position in August 1916.

At the time of the writer's arrival in August 1916 the whole force in Mesopotamia was some-what depressed owing to the fall of Kut in April that year, to the hot weather and the sickness which had been caused by it, and to the constant shortage of supplies and necessaries owing to water transport difficulties.

There had been no failure in supply arrangements: this is fully borne out in the report of the Mesopotamia Commission.

The failure had been almost entirely one of water transport, owing to the great calls made on it whilst the relief of Kut was being attempted, and this over-strain led to constant break downs during the hot weather in order to maintain the force at the front with their necessary daily supplies. During the whole of the summer, and in fact up to about the beginning of October, the tonnage allowed for supplies was barely sufficient for mainpurposes, and did not allow of the collection at the front of a paper reserve. During August there were seldom more than 10 or 12 days supplies on the ground at the front and owing to the vagaries of water transport, as will be detailed further on, it was quite impossible to ensure that all the items of the regular ration should be maintained at a level. Hence there were constant complaints of shortages of various minor items such as jam, milk, ghee, gur, etc., and these complaints, which were technically known as "Mother's Boy" complaints used to cause an undue amount of excitement.

# Comparative Value of Water Transport.

The Military text books lay down that the comparative costs of road, rail and water transport are as 100: 10: 1: this proportion is undoubtedly based on conditions obtaining in western Europe where water transport would be along smooth and well cared for canals, and where roads were level and in good The Japanese in Manchuria in 1904-5 found that condition. the cost of rail to road transport was as 1 to 100, and in the same way it will probably be found in Mesopotamia that railway transport will eventually be far cheaper than water owing to the exceedingly difficult conditions met with there. . In the first place there is always a fairly strong current against which up-going steamers have to contend. Next, the river rises and falls during the year some 20 odd feet, and owing to this the channels are constantly altering, thus making navigation exceedingly difficult. Thirdly, there is the absence of docks, workshops, and other conveniences for repair or construction. the supply point of view also there are a number of other difficulties about water transport which are not shared by either road or rail, and these facts do not seem to have been generally appreciated before, and to a large extent are not yet fully appreciated by all Staff officers.

### **Port Facilities**

There was another difficulty which was, at the time spoken of, as great as any of the others, and that was the matter of port facilities. Basrah is looked on as a good port and anyone not knowing either Mesopotamia or the East Coast of Africa would at once jump to the conclusion that we were far more favourably situated there as regards port facilities than they were for, say, the Abyssinian Expedition, or those of Suakin or Jubaland. Yet there can be no comparison of the difficulties met with at Basrah and those elsewhere, since at Basrah the obstacles in the way of making communications and of spreading were almost insuperable. If a map be looked at, it will be seen that the whole country bordering on the river is cut up and intersected by small creeks and irrigation channels. There were practically no roads, and the-soil is a fine powdery mud without stones of any kind, so that metalled roads were unknown. Timber also was lacking for bridges, and hence everything required for the improvement of communications had to be imported. Then river craft and tugs for unloading steamers, as well as wharves, were short, and it was not an uncommon thing in those days for a steamer to be a month in port before it could be relieved of its cargo. difficulty which sometimes obtruded was the bar at the mouth of the river, which prevented ships drawing over 18 feet crossing it: this meant transhipment at the bar leading to a waste of labouralso a great difficulty at that time—and port craft.

#### Reserves.

The maintenance of a sufficient reserve in the country also presented great difficulties. It is to be remembered that a certain portion of the reserve will always be "untouchable", that is to say, it is tied up on board ship, in transit to the country, or awaiting loading or unloading as the case may be.

In those days, when labour was short, organisation less efficient than it is now, and ships took a long time to turn round,

that amount of reserve which was "untouchable" was correspondingly great; besides which we rarely had, by weight, \( \frac{3}{4} \) of what we considered necessary for a comfortable reserve.

Moreover, as maintenance was never by complete rations day by day, but rather in lots of so many days of each article at a time, it meant that shortages frequently occurred owing to the reserve dropping below the level of the "untouchable" days.

Our method was, of course, to demand monthly from India our maintenance plus a percentage for contingencies and plus or minus what we were, at the time of the demand, below or above our reserve. We also furnished the order of the urgency in which the articles were required and then prayed that they would arrive in that order and as evenly as possible.

### **Shipping Difficulties**

Many things interfered with the shipping of supplies as we However anxious our own officers in could have wished them. India might be to help us, they were anything but free agents. In the first place supplies in India are far from reliable and there was frequently trouble on this account, whilst the climate of India forbids the storage of large reserves. Then there were the rival demands of other theatres of war- East Africa, Egypt, Salonica and France, and demands from these other theatres often varied in a manner that could not be calculated on. Further, tonnage was limited and the demands of other departments for urgently required stores would often cause equally urgently wanted supplies to be thrown out at the last moment. Lastly the trimming of ships and the necessity of utilizing tonnage space, according to the specific gravities of supplies rather than according to the the urgency in which they were required, made our reserve an exceedingly small one, when the whole months maintenance in one or two articles might not arrive till the end of the month, owing to these shipping troubles. Our worries were finally capped by never knowing exactly what was coming on each ship, as the supply officer's wire related to what he handed over to the Port Trust on the wharves, while the Port Trust might load only a part of that on the ship, and not be quite sure what they had

or had not loaded, owing to the similarity in outward appearance of sacks and boxes of different articles.

# **Base Supply Depot**

The Base Supply Depot is the foundation stone of the supply system of a campaign, and here we were very heavily handicapped in Mesopotamia at the time treated of. When the campaign opened, there was no idea of the proportions to which it would grow, and the space allotted for the Base Supply Depot probably appeared ample. By 1916 however it had to overflow into various other depots, and finally in June and July 1916 it had been moved to Magil, some five miles up river from its original site. There still remained the various overflow depots for wood, forage, coal, etc., spread over some eight or nine miles of river front, whilst the Base Supply Officer at that time was also responsible for all local feeding arrangements and had to supervise some half dozen retail issue depots. All this he had to do without a motor car or a motor launch of his own, and assisted by a staff that was nominally about fifteen or sixteen officers but was often only half that number owing to sickness. Nowadays some sixty officers are found necessary to carry out these same duties, and though the force has increased very considerably since those days, yet it is acknowledged that administrative staffs and establishments do not need to be increased in anything like the same proportions. If five men are required to feed a thousand men, eight will probably do for 2000 and 10 for 3000, and so on.

### Labour and Communication

Labour was another great difficulty then. Its organization on a proper footing had begun, but in the transition stage it was far from satisfactory to our executive officers who complained that they no longer had any control over it. Now that the organization has crystallized, it is found to be an exceedingly efficient one on the whole, but the process was not completed till after the period treated of here. In August 1916, too, the Base Supply Officer was found to be burdened with the very considerable work of controlling as well as of executing despa-

tches to the front — a task that does not require much labour, where these can be made by rail or road, but which did mean a very considerable problem when the vagaries of water transport had to be dealt with. To complete his troubles, telephone and local postal communications were exceedingly poor in those days. With some of his out-depots he had no telephone communication at all; the telephone lines were overworked and it might sometimes take an hour or more to get through to the office required. Altogether the Base supply Officer's task then would seem to have been easily the most difficult in Mesopotamia, if not in the whole war.

### **Control of Despatches**

Existing regulations do not provide in any detail for the system of controlling despatches of supplies to the front, and, where these can be counted on being loaded in approximately whole days for the force in question and in reaching their destination in approximately even times, there is no need for any elaborate system. In Mesopotamia the problem was found to be peculiarly complicated, however, both by loading difficulties and the very varying and incalculable times of transit. classes of water transport were in use at the time—steamer towed barges and native sailing craft. Both varied greatly as to their times of transit, and all that has been said as regards the difficulties met with in ocean going steamers from India were met with again in river barges. There are various kinds of barges, some open, some closed, some with shelter roofs, some without. Some were to carry troops, others animals, others neither, and each of these would impose limitations as to the class of supplies which might be loaded in them. The tonnage capacities were calculated out at 80 cubic feet per ton. This was found to be barely sufficient for our heaviest supplies such as tinned meat, flour, and grain, whilst of course fuel and fodder (comprising together 50% of the total supplies to be despatched daily) were considerably over this specific gravity.

Then one never knew from day to day what transport was going to be provided next and so no loading schemes could be

worked out in advance. Many attempts were made to alter this, but in view of the existing conditions it was quite impossible. Barges coming down empty from up river might, after inspection, be found to be available at once for another trip up river; others might require repairs extending over anything from one to seven or eight days. The same applied to the steamers, and as certain steamers could only take certain barges, it sometimes occurred that a laden barge might not be moved from Basrah for a week, whilst at others only a few hours was given for the loading. This short notice meant that labour was often badly wasted in being moved from place to place, when they might have been moved earlier or from nearer localities, had the programme been given earlier.

The problem of keeping supplies at the front level was singularly like those annoying ones at school of a bath with hot and cold taps and a waste pipe, each capable of filling or emptying the tub in a given number of minutes. Here there was a tub with some fifty odd taps each flowing at different and varying rates, and a waste pipe equal in emptying capacity to their total filling capacity, but most particular that what it carried off should be mixed in certain proportions. Eventually it was found that the problem could be solved by keeping a very careful ledger account of all stock in transit as well as what was on the ground at the front and in trying as far as possible to maintain the total of these two at a level consistent with the total weight of all stocks in front of the Base. Up to the institution of this system it had been customary, on receiving a report of shortage of any article, to send off as much as was available, sometimes 30 or 40 days supply, possibly in the first available fast barge, thus sacrificing valuable tonnage and sowing the seeds for another shortage a fortnight hence.

### Administrative troubles

The administrative supply office also had its troubles. Clerks were short, bad, and incapable of devising records which would quickly show how matters stood. Indian clerks seldom, if ever, understand the basic principles of their work. System is

entirely foreign to their nature, and they learn their work by rule of thumb and are usually incapable of working out what is an exactly similar problem to one they are constantly solving, if a few unessential names or details are changed. At that time, with a new Army Commander taking charge, statistics of various kinds were constantly being called for, all of which should have been readily available from properly devised records by clerks properly educated. As it was, each call often meant the throwing out of the whole of the routine work of the office, until the records were revised and put on a proper basis. It is not out of place to draw attention here to the fact that the subject of statistics is one which merits far more attention than it at present receives. It is said that both those who support and oppose vaccination use the same set of figures from which they draw their opposing conclusions, and nowhere is a little knowledge such a dangerous thing as in the domain of statistics. there are "Lies, dammed lies, and statistics" is due to this very ignorance of what statistics should be. It must be remembered that statistical registers and graphs, giving day by day results and percentages, are far more valuable than mere statements which show no comparisons with the past, or percentages by which they can be compared with other statements.

### Other troubles

Besides these executive and administrative problems that were ever with us at the Base there were others that at times became equally pressing. There was in these days a daily big deficit between the consumption of the Nasariyeh force and the total of its receipts by water and local purchases. We were always making out "green curves" to show when, owing to this process of diminution, the garrison would be at its last gasp, which would sometimes be before the railway there could be completed and sometimes after, according as local purchases decreased or increased. The railway was completed at the end of the year and a means of increasing the water tonnage was found before then, whilst local purchases increased, so that actually the crisis never became acute.

The feeding of the construction party on the various railways was another problem which took up a certain amount of attention and time, as owing to the shortage of our reserves generally, due to the reasons already given, one could not anywhere spare more than what was just necessary as a reserve, whilst of course local commanders and supply officers were always striving to keep as much up their sleeves as possible. We had then to deal with the Aliwaz, Qurnah, and Amarah areas as well as the Nasariyeh and Tigris Front areas already mentioned, and we frequently had other administrative troubles. Once it was found, when both flour and atta were very short, that extra issues up to 50 and 25% of the already generous ration scales of these articles were being made; at another time the issues of fuel, grain, and fodder were found to be averaging 25% more than they ought to have done, in a large area. Payment issues also had to be stopped, and of course with the institution of an efficient Canteen service they were no longer required, but even so they have never been entirely eliminated. It can easily be seen that unchecked extra and payment issues must considerably upset all demands and tonnage calculations, and their variability also added to the trouble.

#### **Local Resources**

The local resources of Mesopotamia are practically confined to meat, bhusa, barley, wheat, and dates. The lack of communications, except the two great rivers themselves, which only tap a part of the country, further lessened the amounts which might have been available. In these circumstances the amount we were able to obtain from the country was very creditable, considering that the whole country was a population of only 21 million, that probably not more than a third of this was comprised in the territory we then occupied, and that, owing to the poor communications spoken of, the supplies of a part of these even were cut off from us. In 1870-71 the Germans were only able to obtain one third of their requirements for an army of 800,000 from the portion of France they occupied, with a population of million, and with about 10 to 13 practically perfect road and rail communications. As a matter

fact we undoubtedly took too much of the meat supply, thus leading to a shortage later on and to the necessity of supplementing it by frozen meat ships from Egypt. We are now beginning to utilize the fuel oil of the country for fuel, and, when the Haddick stoves are fully in use and when a fuel oil scheme of cooking is properly developed, we should be independent of out-side aid in this direction. The agricultural development schemes for the country, now well under way, ought also to make us self supporting as regards fodder, grain, and cereals, and so nearly eliminate the shipping problem as far as supplies are concerned.

# General Maude's plans.

General Maude took command of the force at the end of August and gave instructions for the collection of 25 days supplies for the whole force at and in front of Sheikh Saad. wanted there by the first of November, but, so short was river tonnage, that not only were we unable to get this amount there till about the middle of December, but it also became necessary to move back one division to Amarah. Amarah was a very large intermediate depot and the river head for native craft, as beyond that point they were liable to be lost up the side creeks, owing to the desire of their owners to do private work, or to the hostility ofneighbouring tribes and others in the pay of the Turks. the middle of December, although we had 25 days supplies of weight on the ground, we were by no means level owing to enthusiastic, but misguided efforts on the part of some of our own temporary officers, who were keener on getting up a certain number of tous of supplies rather than in keeping them level, and this led in one case to a certain amount of back-loading. At the front the 25 days supplies were distributed, 15 days at Sheikh-Saad, and 10 days in "dumps" further forward. These "dumps" were really what used to be termed Supply Parks, but, owing to. lack of transport, had become fixed magazines. The necessity for collecting such large amounts at such a short distance in front of the Advance Base was the experiences of the past winter, when an excessive amount of rain had rendered the bringing up of sup-

plies, across even such short distances, the matter of the greatest -difficulty, and it was not wished to hamper operations for the same reason again. In these "dumps" also supplies were anything but level, owing to a shortage of supply establishments and shortages in articles available at Sheikh Saad, so that in order to utilize the tonnage by mechanical, animal, or light railway transport which was daily allotted, the things which were available had to be pushed up whether they were wanted or not. Barges loaded with complete rations were ordered to be forwarded from Amarah, and during the advance this was the principle method of feeding the troops, although as much as possible was also sent forward from Sheik Saad in a similar manner. From a supply point of view it was, of course, exceedingly annoying to have to send up ration articles from Amarah of which there were large stocks so much nearer to the front, but owing to the necessity of forming the dumps, it would appear to have been quite unavoidable. The whole of these dumps and the control of despatches were under the Advance Base Supply Officer, and it would seem just as necessary to relieve him of this work, as it was found to be necessary at the Base for the Base Supply Officer to be purely an executive one.

The advance came at the end of February, and Baghdad was entered on March the 11th, a 3 days halt having to be made at Azizeh in order to allow of supplies catching up. The Tigris has a particularly winding course between Kut and Baghdad, the distance by water being 215 miles against 90 by road. In Baghdad there was nothing in the way of supplies, and the civil population, being cut off to a large extent from supplies from the north, became dependent on us, and caused a good deal of anxiety. We had to import and carry up river for them a large amount of grain during that year.

### Conclusion

The chief lessons that have been enforced on the writer's notice from the experience gained during this period are as follows.

- (i) The supreme necessity for the better training of our clerical establishments and in bringing them and our office methods generally more up to modernstandards of efficiency in these matters. not seem to be sufficiently realised that the Indian clerk is up against methods, entirely foreign to the East, of order, punctuality, and speed. No efforts are made to teach him the principles of office work. He comes into an office and is taught to do everything by rule of thumb and by precedent, and is quite unable to deal with anything in any way novel. He further cannot differentiate between work for audit requirements and information necessary for statistical. and informative purposes. Consequently there is a constant hampering of the energy of both administrative and executive officers, owing to their clerks being unable to furnish them quickly with information they require, or to carry out routine office work as quickly as should be done.
- (ii) The need for staff officers generally to have close acquaintance with the details of our work.

It has been stated that war is, in the first place, a matter of transport; and in the second, one of supply; and, in the third, one of the destruction; so, if it be true that a general gives a hundred glances back to his line of communications to one which he gives forward to the enemy, it is essential that our staff officers should study supply and transport.

# EXTRACTS FROM "THE GERMAN ARMY" Guide to military technicalities and institutions

RV

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### I. SPHERE OF THE GERMAN ARMY. A. OONSTITUTION OF THE GERMAN EMPIRE.

Upon the basis of the constitution of the German Empire as laid down on April 16th 1871, the territory comprised in the Confederation consists of the Kingdoms of Prussia, Bavaria, Saxony, Wurtemberg, the Grand Duchies of Baden, Hesse, Mecklenberg, Schwerin, Saxe-Weimar, Mecklenberg-Strelitz and Oldenberg, the Duchies of Braunschweig, Saxe-Meiningen, Saxe-Altenberg, Saxe-Koburg and Gotha, and Anhalt, the Principalities of Schwarzburg-Rudolstadt, Schwarzburg-Sondershausen, Waldeck, Reuss of the senior line, Reuss of the junior line and Schaumburg, Lippe, the Hause-truns of Hamburg, Breman and Lubeck and the Imperial Province of Alsace and Lorraine.

The office of President of the Confederation is held by the King of Prussia, who carries the title of the German Emperor. The Emperor represents the Empire in international relations, declares war and concludes peace in the name of the Empire, as well as entering into alliances and other agreements with foreign States and accrediting and receiving ambassadors.

The laws of the Empire are made by the Council of the Confederation (Bundesrat), consisting of the representatives of the governments of the several States, and by the Reichstag, the members of which are elected direct by universal secret suffrage. The Emperor has the right of summoning, opening, proroguing and closing both assemblies, but has no right of veto upon the decisions of these two Legislatures. The Chancellor of the Empire, who is nominated by the Emperor, presides in the Council of the Confederation. The Reichstag chooses its own President.

The whole land forces of the Empire compose a single Army which is under the Emperor's orders in war and peace (sovereign prerogative of the military supreme power). There is one exception, in so far as the Bavarian troops are in peace under the orders of the King of Bavaria. The army's peace strength is fixed in the course of imperial legislation. Its formation in war is decided by the Emperor, who also issues the regulations for the disciplinary administration of the army.

#### B. REGULATIONS REGARDING OOMPULSORY SERVICE AND THE COMPOSITION OF THE ARMY. 1. OOMPULSORY SERVICE.

Every German, with the exception of the members of ruling, mediatized or deposed royal houses, is subject to compulsory service from his 17th to his 45th year. This falls into liability to military service proper, that is to say service in the army or navy, and service in the General Levy (Landsturm).

As a rule the soldier fulfils his military service proper between the ages of 20 and 39 as follows:—

7 years in the standing army; of these the first 2 (the first 3 in the case of the cavalry and horse artillery) are with the colours, the remainder in the reserve. Young men, who have reached a certain educational standard and have proved that they have done so, have only one year to serve, during which however they have to clothe, equip and maintain themselves as well as remaining a correspondingly longer period in the Reserve. (These are called One-year Volunteers).

5 years in the first levy of the Defence force (Landwher.)
7 years in the second levy of the Landwehr.

A portion of those subject to military service, namely those who have not been called up to serve in the standing army, make up the Recruiting Reserve; this serves to replenish the army on mobilization and to compose formations of reserve troops. The duty of serving in the Recruiting Reserve lasts from the age of 20 to 32. On the expiry of this period they are transferred to the Landsturm.

The Landsturm consists of all men liable to military service who belong to neither the army nor the navy. Its object is to take part in the defence of the Fatherland in time of war. It can be called up as well as disbanded by the Emperor.

All those who have been punished with sentences of imprisonment with hard labour are excluded as unworthy of service in the army or navy.

#### 2. ENLISTMENT. ENROLMENT.

Every man subject to compulsory service is, from the age of 20 until a final decision is come to regarding his duties, under an obligation to serve in the forces, that is to say to submit to enlistment in the army or the navy. This decision is usually reached at latest during the 3 years of military service.

The sea-faring population is called up into the Navy.

Every man subject to compulsory service may, before the period when his obligation to serve commences, enlist as a volunt-eer in a unit which he selects himself.

Bound up with the obligation to serve are the obligation to report, that is to say, the obligation to report oneself to the local authority to have one's name entered in the recruits' musterrole and the obligation to present oneself, i. e. to appear before the recruiting authorities, who have to decide as to the duty of service.

Every Army Corps area forms a special recruiting area from which the units of the army corps in question are generally recruited. The Guard Corps alone has no recruiting area; it is recruited from the whole of the Kingdom of Prussia and from Alsace and Lorraine. Every recruiting area falls into several brigade areas; these consist of several Landwehr areas.

The yearly recruiting work falls into:-

- 1. The work of preparation, that is the ascertaining what men subject to compulsory service have been engaged by the recruiting authorities to enrol themselves in the course of the year and their introduction into the requisite lists.
- 2. The work of mustering. This is carried on in spring by the Recruiting Commission. On the basis of the degree of

capacity found by a medical examination, of the result of drawing lots and in certain circumstances after taking into account such considerations, as for example, the indispensability of the recruit to his parents on account of their inability to earn their livelihood, the men subject to service are mustered and proposed for enlistment.

3. The work of enlistment. This is carried on in summer by the Higher Recruiting Commissions. These decide, without being bound by the proposals of the Recruiting Commissions, upon the case of each person liable.

Every year in April and November check-rallies take place at area head-quarters, the object of which is to check the personnel of the furlough class. The latter are bound to appear in person if they do not belong to the Landwehr of the second term. In special cases they can be exempted from this.

As a rule, reservists and men of the first term of the Landwehr are twice called up for practice exercises while in these classes, once for a period of 8 weeks and once for 8 to 14 days.

- 4. Supply of officers and Non-Commissioned officers—
  Under the peace enlistment the Officer Corps is filled up
  by:—
  - (1) Young Germans who enter a unit as Ensigns' (Fahnenjunker);
  - (2) Pupils of the Cadet Corps;
  - (3) Officers of the furlough class.

The condition of entering as an Ensign is the completion of the 17th year and proof of attainment of the requisite educational standard. When the Ensign has done 6 months practical work and proved his ability he can be promoted to be Sub-lieutenant (Fahurich.) The next step is to attend a military college after which, if the officers of his corps approve him by election, as fit to join them, and his immediate superiors draw up the certificate that he has the knowledge of his duties requisite he can be promoted to officer.

The Cadet Corps consist of preparatory institutions for younger pupils and the Chief Cadet College at Lichterfeld near

Berlin for older pupils. Cadets can be sent to the army as officers, or under the denominations of Sub-lieutenants, N. C. O.'s, Lance-Corporals or Privates.

Officers of the furlough class are supplied from one year volunteers who have demonstrated their capacity. They undergo a trial at the close of every year of service and after every practice exercise while in the reserve. Usually they are trained 8 weeks as Sub-lieutenants and as Quartermaster Sergeants.

N. C. O.s are supplied in most cases from individuals in active service, who report themselves as willing to extend their time, or from N. C. O.s' schools. The object of the latter is to train as N. C. O.s young men who have reached the age of military service and are willing to devote themselves to the military profession. Before entering these schools they may attend preparatory schools for N. C. O.'s.

The army is however no dead mechanism but a living organism. The printed regulations cannot accordingly be treated like a sort of handbook of instructions for a machine, in particular so far as affects training. It is not the letter of the regulations but their spirit which must become the common property of the troops. In hard situations, thrown on his own resources, the soldier does not act upon rules and regulations, but according to the spirit firmly and vividly infused into him. In this sense not only the forms but also the spirit are uniform in the German army. It is partly implanted by tradition, partly it proceeds from one, whose personality has made its mark on the German army to a wide extent.—H. M. Emperor William II.

The introductory words, with which the Emperor has sanctioned the Training Regulations of the several arms and designated them as authoritative for the future, include this sentence. "It is forbidden in order to obtain further conformity with the spirit of the regulations or with any other object to make verbal or written additions to them. No restriction can be permitted to the free play allowed to the application of the regulations and to training."

As in all departments in the present day so in what affects the German army the attempt is made to confine all writing to the indispensably necessary amount. The more orders, being of universal application and in writing, are issued, the less can they be actually paid attention to and followed empirically in practicallife. Troop inspections and other occasions offer sufficient opportunity to express one's opinions verbally and to bring out the points which it is thought right and important to bear in mind.

Probably nowhere is so much learnt in so short a time as in the best school of the nation, the army. Anyone who has seen the young men when they are called up as recruits, for the most part of small mental and physical activity, and then sees them again a few months later at the new year reviews as soldiers, imagines he has completely different men before him. year out, strenuous and often special individual labour at his vocation has so developed the defective or at the least ill-proportioned frame that it has become quite straightened out and elastic; drill, gymnastics and riding has induced a growing and often very far advanced activity and control of the limbs; the sluggish spirit has been waked up. He, who has an eye for this change which has taken place in the course of the winter with the recruit, is able to realize what an honest deal of work, application and energy have been needed to produce it. All this is only possible, if the intelligence and experience of superior officers lend a hand in distributing and making the best use of time, systematically passing from the easy to the difficult, avoiding by variety the exhaustion and blunting of the faculties, and in grasping aright what are the temperamental endowments and character of every individual. A further requisite is the attentiveness and good will of the recruit. Here must the foundation be well and truly laid; before learning and capacity can make the swift advance required, the will has to be developed.

Thus we have realized that discipline is the most important part of a soldier's education. It is next required that the soldier should learn all he requires for his vocation; then moreover that he should act upon it amid hardships and dangers, staking and sacrificing his life. The first means of obtaining discipline is the orderly control of the unit in its interior economy, and this above all things:—the good example of superiors.

Every year in October, as soon as the men of the old year have been discharged at the end of September on the close of the autumn manoeuvres, the recruits come in, including the volunteers of one year or more.

They are at once distributed by the Commanding Officer of the regiment among their individual companies and so far as possible evenly, so that e. g. the number of the artisans (such as t ailors, saddlers, cobblers,) distributed to each company or again that of those who have undergone sentences before enrolment, is approximately the same; also height and, in the case of mounted arms—weight, are borne in view. All are examined by the regimental surgeon; those cases where physical defects have crept in since the mustering, so that they are no longer fit for service or are temporarily unfit, are again discharged. The enrolled recruits dressed that is, they exchange their civil clothes, which they may hand over to the unit for custody or send home, for the military garment,—their uniform. one has the parts of his uniform suited to him, that is carefully selected according to his measurement.

After receiving the parts of his kit and equipment, every man has to provide them with his name. For this end there are small pieces of linen imprinted with his name sewn on (for example on the collar), or again labels are fastened on (for example on the man's bedstead.)

#### Reviews of Books

POINTS OF INTEREST

In The Year Book Of Wireless Telegraphy & Telephony 1918.

An Index to Expansion. The annual appearance of the Wireless Year Book constitutes a periodic reminder of the expansion of this world-wide science. Already its ramifications have extended far beyond the expectations of its most sanguine advocates in the early days, not excepting even the great Italian originator himself. We note that this fact forms the subject of specific comment in an eloquent article, that under the title "S O S" figures in the 1918 issue, which has just reached us. The writer deals with the fascinating subject of -Wireless Achievements in Life-saving at Sea; and applies to Guglielmo Marconi the well known phrase of Emerson that he "builded better than he knew."

THE KERNEL OF THE VOLUME. The two outstanding features round which the rest of the volume is grouped, consist of (a) the Liws and Regulations affecting Radiotelegraphy current in the different countries of the world and (b) the tabulated Lists of Stations of the world, subdivided into (1) Land Stations and (2) Ships' Stations. These items occupy 745 out of the 1154 pages of the current issue.

THE LAWS AND REGULATIONS include all the current legislation on the subject in over 100 different countries and their colonies, translated into English from the various languages in which the laws were originally promulgated. This section displays a marked tendency to increase substantially at every appearance, and is very nearly doubled since last year. We find, moreover, included for the first time, some highly interesting and useful summaries of the earlier legislation, and of the present organization affecting Wireless Telegraphy in the different countries.

THE LAND AND SHIPS' Stations Section records the call letters and the general particulars of wireless installations all over the world. It will be noted that the enemy vessels, interned at the beginning of the struggle, and taken over by the various

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he should act upon it amid hardships and dangers, staking and sacrificing his life. The first means of obtaining discipline is the orderly control of the unit in its interior economy, and this above all things:—the good example of superiors.

Every year in October, as soon as the men of the old year have been discharged at the end of September on the close of the autumn manoeuvres, the recruits come in, including the volunteers of one year or more.

They are at once distributed by the Commanding Officer of the regiment among their individual companies and so far as possible evenly, so that e. g. the number of the artisans (such as t ailors, saddlers, cobblers,) distributed to each company or again that of those who have undergone sentences before enrolment, is approximately the same; also height and, in the case of mounted arms—weight, are borne in view. All are examined by the regimental surgeon; those cases where physical defects have crept in since the mustering, so that they are no longer fit for service or are temporarily unfit, are again discharged. The enrolled recruits are then dressed that is, they exchange their civil clothes, which they may hand over to the unit for custody or send home, for the military garment,—their uniform. one has the parts of his uniform suited to him, that is carefully selected according to his measurement.

After receiving the parts of his kit and equipment, every man has to provide them with his name. For this end there are small pieces of linen imprinted with his name sewn on (for example on the collar), or again labels are fastened on (for example on the man's bedstead.)

#### Reviews of Books

POINTS OF INTEREST
IN THE YEAR BOOK OF WIRELESS TELEGRAPHY &

TELEPHONY 1918.

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Governments who have since declared war upon the Central Powers, figure in these lists under the new names which have been assigned them.

These two sections would by themselves comprise an invaluable book of reference for all who have to deal with the applied science, whether administratively, journalistically or technically. But they do not stand alone.

HISTORICAL AND INTERNATIONAL DATA. The "Record of Development", which (after some initial matter) starts the volume, epitomizes in brief outline the principal steps in the progress of wireless, grouped under the years in which they were made, and lead naturally up to a resumé of National and International regulations. This, in turn, is followed by the text of the two current conventions; the London Convention of the 5th July 1912, and the "Safety of Life at Sea" Convention signed on 20th January 1914.

SOME SERVICEABLE ARTICLES. Specially-contributed papers have always formed a feature of the volume, and those contained in the current issue worthily maintain the tradition. Dr. Fleming, who has maintained his connection with the Year Book, in this respect, from its initiation in 1913, fitly figures as the first contributor. His essay on Waves in Water, Air, Earth and Aether admirably demonstrates the fact that Radiotelegraphic Waves are no mere isolated phenomena; but take their place in the great Wave-Family of Nature. The series of analytical notes, contributed by I. Shoenberg, deals critically with the Valve Patents published in 1917. This is a critique composed by. by an expert peculiarly fitted to treat this subject, and should prove extremely useful to technical men. Dr. N. W. McLachlan's essay on The Magnetic Behaviour of Iron in Alternating Fields . of Radio Frequency and that on the Energy Transmission in Wireless Telegraphy contributed by the Dutch Scientist, Dr. Balth Van der Pol, will be found to deal comprehensively with subjects which are occupying considerable attention amongst technical men at the present time. An article, entitled Wireless Possibilities, sets forth a series of speculations upon the future of

Radiotelegraphy and its allied developments. Nor must we omit to mention a record, (illustrated by photographs) under the title of "Heroism" of the gallant deeds of Wireless Operators at sea, during the period covered by the volume.

Included amongst these essays we find an article, with an illuminating introduction by the editor, dealing with Internatoinal Time and Weather Signals. These have been extended since the old days when the Eiffel Tower Station stood alone as a radiator of such signals, until pretty nearly the whole world is covered. Only the other day the Chilians announced the inauguration of daily system from their aerials at Valparaiso. This Year Book article collates all the most recent information available on the subject.

MISCELLANEOUS FEATURES. Numerous Miscellaneous features complete a valuable work of reference and render the volume a complete Vade Mecum of Wireless. They include *Definition of Terms* and a *Dictionary in five-languages*, showing the word-equivalents of Wireless Telegraphy in different language-media, together with a series of *Tables* including Useful Formulae and Equations, Wire Tables, Specific Inductive Capacities and other Data, calculated to be of use to radiotelegraphic practitioners.

We notice a large increase in the series of Biographical Notices and the Bibliography of radiotelegraphy. The Wireless Map of the World, which is bound-in with the back cover, takes the form of a Duplicated Mercator. The positions of the stations located thereon have been revised; and a number of additions inserted, bringing the total up to over 800 entries. It would be unfair to omit mention of the capital illustrations interspersed through the book, which range in interest from historic and up-to-date apparatus, to photographs of "Leading Lights" in the Wireless World, and artistic views of interesting foreign stations.

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2. The following awards are made annually in the month

of June:-

(a) For officers—British or Indian—a silver medal.

(b) For soldiers—British or Indian—a silver medal, with Rs. 100 gratuity.

3. For specially valuable work a gold medal may be awarded in place of one of the silver medals, or in addition to the silver medals, whenever the administrators of the fund deem it desirable. Also the Council may award a special additional silver medal, without gratuity, to a soldier, for special good work.

4. The award of medals is made by His Excellency the Commander-in-Chief as Vice-Patron, and the Council ofshe; United Service Institution, who were appointed administrator of

the Fund by the MacGregor Memorial Committee.

5. Only officers and soldiers belonging to the Army in India (including those in civil employ) are eligible for the award of the medal.*

6. The medal may be worn in uniform by Indian, soldiers on ceremonial parades, suspended round the neck by the ribbon issued with the medal.

#### Note.

(i) Personal risk to life during the reconnaissance or exploration is not a necessary qualification for the award of the medal; but in the event of two journeys being of equal value, the man who has run the greater risk will be considered to have the greater claim to the reward.

(ii) When the work of the year has either not been of sufficient value or has been received too late for consideration before the Council meeting, the medal may be awarded for any reconnaissance during previous years considered by His Excellency

the Commander-in-Chief to deserve it.

#### MacGregor Memorial Medallists.

(With rank of Officers at the date of the Award).

1889...Bell, Col.M.S., v.c., R.E. (specially awarded a gold medal).

1890...Younghusband, Capt. F.E., King's Dragoon Guards.

1891...Sawyer, Major H. A., 45th Sikhs.

RAMZAN KHAN, Havildar, 3rd Sikhs. 1892...VAUGHAN, Capt. H. B., 7th Bengal Infantry.

JAGGAT SINGH, Havildar, 19th Punjab Infantry.

1893...Bower, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).

FAZALDAD KHAN, Dafadar, 17th Bengal Cavalry.

1894...O'SULLIVAN, Major G. H. W., R.E.

MULL SINGH, Sowar, 6th Bengal Cavalry.

^{*} NB-The terms "officer" and "soldier" include those serving in the British and Indian armies and their reserves; also those serving in Auxiliary Forces, such as the Volunteers and Corps under Local Governments, such as Frontier Militia, Levies and Military Police, also all ranks serving in the Imperial Service Troops.

MacGregor Memorial Medallists—contd.

1895...Davies, Capt. H. R., Oxfordshire Light Infantry. GANGA DYAL SINGH, Havildar, 2nd Rajputs.

1896...COCKERILL, Lieut. G. K., 28th Punjab Infantry. GHULAM NABI, Sepoy, Q. O. Corps of Guides.

1897...SWYAYNE, Capt. E. J. E., 16th Rajput Infantry. Shahzad Mir, Dafadar, 11th Bengal Lancers.

1898... WALKER, Capt. H. B., Duke of Cornwall's Light Infantry ADAM KHAN, Havildar, Q. O. Corps of Guides.

1899...Douglas, Capt. J. A., 2nd Bengal Lancers.
Mihr Din, Naik, Bengal Sappers and Miners.

1900...WINGATE, Capt. A. W. S., 14th Bengal Lancers. GURDIT SINGH, Havildar, 45th Sikhs.

1901...Burton, Major E. B., 17th Bengal Lancers.

SUNDAR SINGH, Colour Havildar, 31st Burma Infantry.

1902...RAY, Capt. M. R. E., 7th Rajput Infantry.
TILBIR BHANDARI, Havildar, 9th Gurkha Rifles.

1903...Manifold, Lieut.-Colonel C. C., I.M.S.
GHULAM HUSSAIN Lance-Dafadar, Q. O. Corps of Guides.

1904...Fraser, Capt. I. D., R.G.A.

MOGHAL BAZ, Dafadar, Q. O. Corps of Guides.

1905...Rennick, Major F., 40th Pathans, (specially awarded a gold medal).

MADHO RAM, Havildar, 8th Gurkha Rifles.

1906...Shahzada Ahmad Mir, Risaldar, 36th Jacob's Horse. Ghafur Shah, Lance-Naik, Q.O. Corps of Guides Infantry.

1907...Nangle, Capt. M. C., 92nd Purjabis.

SHEIKH USMAN, Havildar, 103rd Mahratta Light Infantry.

1908...GIBBON, Capt. C. M., Royal Irish Fusiliers.
MALANG, Havildar, 56th Punjabi Rifles.

1909... MUHAMMAD RAZA, Havildar, 106th Pioneers.

1910...Sykes, Major P. M., C.M.G., late 2nd Dragoon Guards · (specially awarded a gold medal).

TURNER, Capt. F. G., R.E.

KHAN BAHADUR SHER JUNG, Survey of India.

1911.. LEACHMAN, Capt. G. E., The Royal Sussex Regiment. Gurmukh Singh, Jemadar, 93rd Burma Infantry.

1912...PRITCHARD, Capt. B.E.A., 83rd Wallahjabad Light Infantry (specially awarded a gold medal).

WILSON, Lieut. A. T., C.M.G., 32nd Sikh Pioneers. MOHIBULLA, Lance-Dafadar, Q. V. O. Corps of Guides.

1913...ABBAY, Capt. B. N., 27th Light Cavalry.

SIRDAR KHAN, Sowar, 39th (K.G.O.) Central India Horse.

WARATONG, Haviidar, Burma Military Police (specially awarded a silver medal).

1914...BAILEY, Capt. F. M., I.A. (Political Dept., MORSHEAD, Capt. H. T., R.E. HAIDAR ALI, Naick, 106th Hazara Pioneers.

1915.. WATERFIELD, Capt. F. C., 45th Rattray's Sikhs. Ali Juma, Havildar, 106th Hazara Pioneers.

1916...ABDUR RAHMAN, NAIK, 21st Punjabis.

ZARGHUN SHAH, Havildar, 58th Rifles (F. F.)

(Specially awarded a Silver Medal).

1917...MIAN AFRAZ GUL. Sepov, Khyher Rifles.

1918... NOEL, Capt. E. W. C., Political Department.



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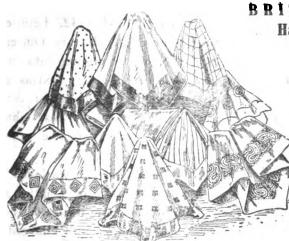
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The following additions have been made to the Library since the New Catalogue, dated 1st January 1916, was published.

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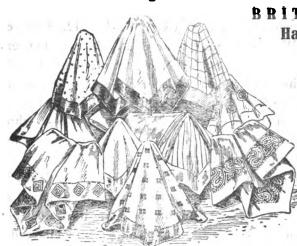


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